THE

JOURNAL OF GAS LIGHTING,

WATER SUPPLY, & SANITARY IMPROVEMENT.

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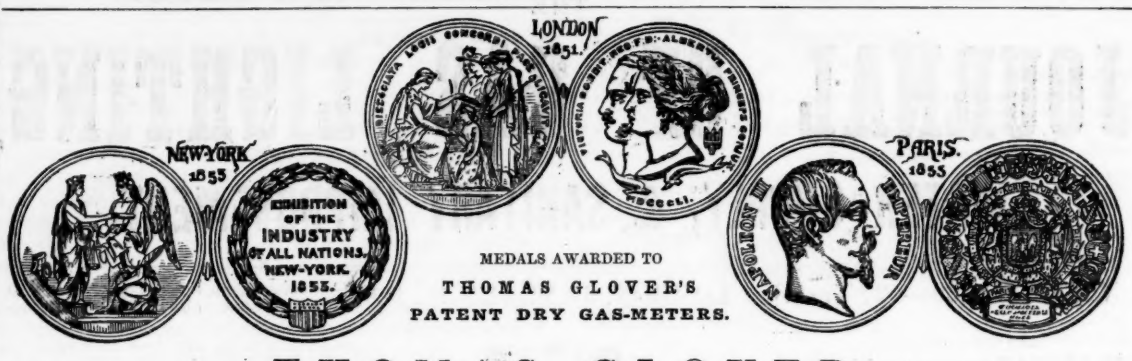

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CONTENTS.

	PAGE
Leading Articles:—	
Notes upon Passing Events	27
Nothing New under the Sun	29
Dr. Parkin on the Causation and Prevention of Disease	30
Circular to Gas Companies	31
Correspondence:—	
Mr. Miller's Report on Liverpool Gas	33
Register of New Patents:—	
Knapton and Aitchison.—Improvements in the Manufacture of Gas	33
Horton, J.—Improved Gas-Meter	34
Livermore, E.—Improvements in Burning Fluids	34
Livermore, E.—Improvements in Generating Gas	34
Provisional Protections	34
Notices to Proceed	34
Legal Intelligence:—	
Court of Bankruptcy.—Re Prior and Prior	35
Miscellaneous News:—	
The Grievances of the Metropolitan Gas Consumers	35
The Metropolitan Gas Supply— Westminster District Board of Works	36
The Gas and Water Question in Manchester	37
Prussian Regulations for Testing Gas-Meters	40
Settlement of the Great Torbanehill Case	41
Coal Oil Manufacture in America	41
Remarks on Inundations	42
Bilston Gas Company	42
Reduction in the Price of Gas at Huddersfield	42
Adoption of Lord Redesdale's Act in Bristol	42
The Metropolitan Main Drainage	42
Share List	43
Price Current	46

TO CORRESPONDENTS.

"Enquire Within."—*No uniform per centage for depreciation of the plant of gas-works can be fixed. The proper allowance must depend upon the original construction of the works, the quality of the materials used, and numerous other considerations which may vary in every case.*

NOTICES.

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The subscription is 15s. per annum, if paid in advance during the month of January, or 18s. credit, in two sums of 9s. each, in July and January of each year. Post-Office orders must be made payable at the Charing-Cross Money-Order Office, to William H. Bennett, No. 42, Parliament Street, Westminster.

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THE JOURNAL OF GAS LIGHTING,
WATER SUPPLY, & SANITARY IMPROVEMENT.

TUESDAY, JANUARY 17, 1860.

NOTES UPON PASSING EVENTS.

THE Metropolitan Board of Works, true to the principles of organized governing bodies, is displaying considerable earnestness in its attempts to secure a revenue which should enable it to dispense with the periodical control of its constituents; and it has commenced an active agitation in favour of the maintainance of the Coal-Tax. Hitherto the only Local Board of Works which has replied to the appeal of the Central Board on this subject is the St. George's, Hanover Square, Board; and, oddly enough, although the District so represented is far from being one of those exposed to feel the gross injustice of such a tax, it has had the honesty, and the true sense of political economy, to protest decidedly against the maintainance of a system which, in fact, taxes a portion of the community in order to spare another portion, perhaps more able to support the public burthens. It is strange that at the present day, when the schoolmaster is supposed to be so busily engaged, abroad and at home, the elementary principles of political economy as applicable to these questions should be practically so little heeded by the bulk of our fellow-citizens. The toll, or tax, upon coals is of the nature of an *octroi* due, and the money so raised is obtained, we again repeat, not in proportion to the taxpayer's means, but in proportion to his wants; and, to cite personal illustrations of this fact, the Marquis of Hertford, who does not inhabit the various palaces he possesses about London, would pay far less (not proportionally, but actually) towards the coal-tax than a manufacturer who is unable to appropriate the small per centage he ought to charge to each of his customers. We contend that whatever the Municipality of a town lays out for the improvement of that town ought to be paid for by rates levied directly and equably upon the whole of the property therein; and we are also convinced (notwithstanding M. Hausseman's wilfully false allusions to the "*erremens de l'aristocratique Angleterre*") that the necessity for a direct and equal taxation will be found to constitute the best protection against the jobbery to which the Metropolitan Board of Works, as at present constituted, and all such bodies, seem to be condemned. It is said, as one reason for the continuance of the coal-tax, that the Board has undertaken to advance certain sums for Metropolitan improvements; but for our own parts we confess that we are still more than sceptical as to the public benefit likely to be conferred by the execution of the new Street from Long Acre to Covent Garden; and we should regret to see many such "aristocratic" jobs repeated through the instrumentality of a coal, or any other indirect, tax granted for a series of years. The fact is, that the guardians of the public purse, whether in municipal or in imperial matters, cannot too often be compelled to render an account of their stewardship; and if we read correctly the records of the past professions of some of the leading advocates of the present system of indirect taxation, they themselves formerly were amongst the most violent opponents of the very system they now support.

We dwell somewhat upon this subject, because it seems to us that the very efficiency of the whole scheme of Municipal Government lies in the truthfulness of the responsibility of the elected directors of such bodies to their constituents. Everyone who has watched closely the action of Municipal bodies must be aware that, unless the consequences of their actions directly touch the pockets of the parties who elect them, it is hard to prevent those bodies from degenerating into cliques, from which respectable men keep themselves studiously aloof. To some extent this state of things actually exists in the City of London, and it is notorious at least that the respectable leading men of the City avoid, as much as they possibly can, any contact with Municipal affairs, or any participation in City honours. It seems to us that much of this sad state of things arises from the fact that the City possesses large fixed revenues, which it raises without the necessity for appeal to the ratepayers; and we therefore feel it to be our duty at once to record our protest against any attempt to re-enact, with the Metropolitan Board of Works, a system which has already proved so mischievous. For the benefit of M. Hausseman, we would add, that our "*erremens*" has been precisely that we have retained the blunders of the school of political economists his nation, though fortunately not his Emperor, still seems to admire; and that the worst part of our Municipal organization is the one founded upon the vexatious and monstrously unjust system of *octrois*. Yet this is precisely the principle Mr. Thwaites seeks again to establish amongst us.

Dr. Letheby does not seem likely to do much towards retrieving the reputation of his employers, on the score of common sense at least; for it would be hard to conceive a more preposterous forago of nonsense and exaggeration than his last report about the health of the City, especially that portion of it which refers to the influence of the intramural interments upon the rate of mortality. The statistics Dr. Letheby gives were themselves very startling, and certainly some explanation ought to be given of the apparent anomaly of the enormous range of the deaths in the various districts considered. We are convinced that the returns given do not express the real facts of the case, and that it is not true that in any instance has the mortality of the resident population of any part of London nominally descended to a rate in any way approaching 8, per 1000. The anomaly ought, we repeat, to have been explained, or the blunder accounted for; and under no circumstance should a philosophical inference be drawn from an occurrence which must prove to have been an exceptional one, even if it ever really existed. It is true that Dr. Letheby himself refrains from any decided reasoning upon this strange phenomenon; but he incorporates its results in his returns, and he takes no open steps to warn the public against hasty conclusions on the subject. But the tale about "the festering masses of corruption," as recorded by the Doctor, and magni-

fied by the horrible story writer of the *Times*, strikes us as being one of the most perfect specimens of "bunkum" our very credulous public has lately been favoured withal. There may have been a clerical mistake in the figure of the tons of human remains said to be piled under the City Churches; so it may not be fair to dwell upon it. The great error in Dr. Letheby's Report, however, consists in the assumption that, even if all these abominations were there, they necessarily produce the consequences he states. Dr. Parkin, who is quite as able to form an opinion on this matter as Dr. Letheby himself, flatly asserts that there is not necessarily any universal infection produced by the largest accumulation of decaying human remains; and even Dr. Letheby fails to show that those congregations frequenting the churches where the interments have been the most numerous presented any extraordinary mortality. We ourselves attended very frequently *in* the catacombs of St. Dunstan's-in-the-East, when the bodies were removed, without feeling any inconvenience from the local atmosphere; and we know that the workmen who have been employed in the other vaults about London suffered as little in their health, whilst thus constantly employed in removing the corpses, as did the workmen of Paris when the intramural sepulchres of that town were cleared. No doubt it is neither pleasant nor desirable that the practice of intramural interment should continue in a densely-peopled town like London; but we do contend that Dr. Letheby's tale on the subject was grossly exaggerated, and that the cause of truth and of true sanitary science cannot be advanced by such means. Dr. Letheby is capable of rendering good service to our common cause, and it is with the greater regret, therefore, that we observe that he is falling into the habit of writing wordy nothings in the Simon style.

In the *Saturday Review* of the 14th instant, there appeared an article on the shortcomings of Private Enterprise, to which it may be desirable to reply shortly, on account of the remarkable talent and influence of that Journal. Taking text from the strange and very discreditable disclosures of the management of the Great Eastern Company, the *Saturday Review* proceeds to say, in so many words, that no Government Administration ever made greater blunders, or was guilty of greater jobbery than may be discovered in the history of this unfortunate vessel. Now, we do not intend to question any of the accusations against the Directors of the Great Eastern, for the simple reason that we have no access to the documents which would be likely to enable us to form a correct opinion on the subject, and we suspect that the author of the article in question had no advantage over us in this respect. But if even it be admitted that the whole story of this vessel had been a tissue of blundering and dishonesty, we are not able to discover in such a state of things an excuse for the notorious blunders and dishonesty of our Administration. Two wrongs never make a right; and we at once admit that it really would seem that precisely in proportion as the operations of Private Enterprise approach to the magnitude of those of Government, so do they become exposed to the same class of evils. The cause of these evils consists, in fact, in the absence of any direct personal interest or responsibility in the agents of either class of Administration; and like causes naturally produce like effects. The *Saturday Review* ought to have shown, amongst other things (that is to say in order to support its thesis), that our Admiralty took the lead in scientific progress, that its experiments always succeeded, and that its agents and contractors were irreproachably honest. This is notoriously not the case; and all that can be said on the question thus raised is, that even if the accusations be true, the Great Eastern Directors are only as bad as our Aministrators. To the tax-paying public there is, however, this difference in the two cases, viz.: that they are not compelled to support the consequences of the follies or the dishonesty of the former, and that there is some kind of personal responsibility attaching to them; whereas the Central Administration almost escapes control, and the taxpayers have no remedy, let their money be wasted, or peculated, how it may. If the shareholders of the Great Eastern lose their money, they have their own apathy and carelessness to blame; it is a very different matter with a "Balaclava mess," or a Board of Health job.

The Improvement, Gas, and Water Bills for the approaching session of Parliament present many important subjects for consideration. The West Middlesex and the Cardiff Water Companies, for instance, have applied for powers to increase their capital, and to execute new works for the supply of their continually-increasing demand; the Glasgow Corporation are also in the field for an increase in their borrowing powers, and it would thence appear that the cost of the new supply has exceeded the calculations originally made. By their first Act the Glasgow Corporation were entitled to borrow £700,000; by their second, they were entitled to raise £200,000 additional; now, after having raised £880,000, they seek powers to borrow a further sum of £340,000; and who is to say that they will end here? At any rate, it is evident that the water supply of a population of about 400,000 souls has in this instance cost about at the rate of £3 per individual; so that, if the Loch Katrine water be pure, it is unfortunately not a very cheap commodity. The Manchester Corporation seems also to be compelled again to apply to Parliament for powers to increase the capital of its water-works establishment, under circumstances, too, which would seem to indicate that the capacity of its works was not adequate to the supply they were designed to afford. In the bill thus presented by the Manchester Corporation there are, we would add, some clauses to which, after the recent squabble with respect to the use of the various kinds of gas-meters, the attention of the Manchester public ought to be drawn. Thus, for instance, by clauses 3 and 4, it is virtually provided that the Corporation shall hereafter have the power of prescribing, without appeal, the nature and description of machinery to be adopted for the distribution of water. Now, it seems to us that there is a danger in such a proceeding. The Corporation ought, no doubt, to have the power of refusing to supply water when improper machinery is used; but to grant to the Corporation the power of prescribing, *à priori*, the goods or systems to be employed, is to open the door to jobbery and favouritism, at the same time that it checks future improvement. The Manchester Corporation have also presented an Improvement Bill, avowedly for "effecting further improvement in the said city, of removing obstructions in the river Medlock, and for other purposes." A general reader would, of course, suppose that "other purposes" would be of the same description as those specified before them; but we beg to inform the taxpayers of Manchester that clause 20 of their Improvement Bill, which is the only one referring to "other purposes," is introduced for the "purpose" of increasing the retiring pensions of the police.

The Liverpool Corporation, like their neighbours of Manchester, are in trouble with respect to the compensation to be made to the mill-owners, and they have applied for powers to increase the capacity of their storeage Reservoirs. It would appear, also, that the experience of the last few years has demonstrated to the very sincere and earnest patriots of this model Corporation, that an efficient water supply must be at all times a costly operation; and they have apparently arrived at the conclusion that the water-rates ought to be based upon some proportion to the rental of the houses, as nearly as possible analogous to, but in excess of, the proportion adopted in London. According to the Schedule appended to the Bill presented by the Liverpool Corporation, the rates hereafter to be paid by the lower class of houses will be at the rate of 5 per cent. per annum of the rental; whilst for the higher class of houses the rate will only be $3\frac{1}{3}$ per cent. This inequality in the proportionate payments is a funny commentary on the style of socialism prevalent in Liverpool! There is also, we may here observe, an illustration by no means rare, unfortunately, furnished by this Bill of the modern system of law-making. By clause 8, it is provided that the Railways Clauses Consolidation Act shall be incorporated in the proposed measure, but that wherever the word "Railway" occurs, it shall mean "Water-work." Really, it will soon be necessary to have a new dictionary of our language. The President of the United States, whilst intending to say that people may meet upon some common *ground*, seriously talks of their meeting on a common *platform*; and here we have the Liverpool Corporation talking of *Railways* when they mean *Water-Works!*

The Dublin Corporation has presented a Bill for the purpose of obtaining powers to execute the works required for the improvement of the water supply of that town; and it may be inferred, from the tenour of the measure, that those works will be upon a very large scale, and upon the impounding Reservoir and gravitation system. We confess that we look with dissatisfaction upon all such projects; and that we consider the establishment of impounding Reservoirs as being only admissible when all other means of obtaining a water supply have failed. But there are, of course, circumstances under which there can be little choice as to the source of a water supply, and when artificial sources must be adopted. The Bill of the

Dublin Corporation Water-Works appears to us, on a cursory perusal, to be carefully drawn, and it certainly is free from the obnoxious clause of the Manchester Bill before alluded to, which gives to the Corporation the exclusive right of prescribing the distributing machinery to be employed. The Dublin Corporation ask to be entitled to prescribe, or to approve, such machinery; or, in other words, they are willing to allow their customers to select the goods they themselves like, provided the consent of the Corporation be obtained. The Manchester Corporation seek to reserve even the right of selection.

We have not space at present to notice the other Bills connected with Municipal and Sanitary Improvement lately presented, and therefore reserve them for our next number; observing at present that amongst them there is one emanating from the Metropolitan Board of Works, to which it is essential that the attention of all the Gas, Water, Canal, Railway, and Dock Companies ought to be seriously called, on account of the influence it appears to be likely to produce upon the rating of their properties. It is curious too, we would add, to find that the inhabitants of Dartford are at last obliged to resort to the aid of a Company to obtain a water supply, after having gone to the expense of attempting the same object under the guidance of the late General Board of Health. The scheme by which it is now proposed to effect the supply of Dartford, comprehends likewise the supply of Crayford, Bexley, Erith, Plumstead, &c.; and it seems to be one of the first serious attempts made to render available for the supply of the southern suburbs of London the large bodies of water which come to the surface of the chalk in the district lying to the south-east of the great lines of upheaval of the London basin. To us, however, it would appear that the supply of Dartford could be obtained far more easily, and more economically, than by the means now proposed.

We cannot refrain, pressed though we are for space, from calling attention to the unfortunate squabble (that *is* the name) now going on between the Police Commissioners and the Gas and Water Company of Inverness. It would appear that the respective parties have gone to arbitration; but so absurdly have they arranged their matters that the questions connected with the supply of gas are referred to one party, and those connected with the supply of water to another. The two arbitrators happen to have fixed nearly the same time, but not the same places, for their hearing; and thus, in both cases, a decision has been arrived at in the absence of one of the disputants. It seems, from the information we obtain, that there is a great disposition on the part of the Police Commissioners to spend the public money in law, and in scientific evidence. Might we suggest that, perhaps the true interests of their clients would be best served by the exhibition of a more conciliatory spirit?

We feel it, also, to be our duty to mention that not only has the small-pox lately exercised alarming ravages in the Metropolitan Districts, but that the pleuro-pneumonia is raging amongst our cattle. Our would-be scientific authorities of the General Board of Health (who were so active in their attempts to suppress Dr. Parkin's Reports on the Choleraic visitation in our own Colonies, whilst they published long and useless reports on the Yellow Fever at Lisbon), would do well to abandon their old traditions, and to study conscientiously the various atmospheric and telluric conditions which are evidently at work, both at home and abroad, at the present time. We lately called attention to the sanitary state of the north-west of Continental Europe, and we now add, that the facts above mentioned, with respect to human and animal disease in our own country, should make us reflect seriously on what the next summer may bring forth. It is curious that the vivid displays of the Aurora Borealis of September last were accompanied by displays of the Aurora Australis, in Chili and in Australia, quite as vivid. Does this universal disturbance of the electric state of the atmosphere bear in any manner on the occurrence of disease?

The Australians, by the way, seem to be rapidly following in our traces. We observe in the *Melbourne Argus* for November 16th last (the very date is worthy of remark; "'twas sixty days since"), a report from Mr. J. Hotson, on the Cape Patterson Coal-Fields. It has rarely been our lot to read a more sensible, business-like document of this kind; and we sincerely congratulate the Directors of the Victoria Coal Mining Company on the prospects it holds out to them, and to the manufacturing interests of that wonderful colony.

The attention of Gas and Water Companies is called especially to the advertisement of the *Parliamentary Remembrancer*. This publication may render, and indeed has already rendered, such service to Private Enterprise, as to merit far more support than it has received. We will return to its consideration, and in the meantime we earnestly recommend it to our friends.

NOTHING NEW UNDER THE SUN.

The longer we live, the more strongly we become impressed with the truth of the aphorism of Solomon—"The thing that hath been, it is that which shall be; and that which is done is that which shall be done: and there is no new thing under the sun." Even gas lighting, one of the marvels of modern science, may be traced back to the sacred fires kept burning on the altars of ancient Greece; and of the host of "new inventions" that are yearly patented, there are scarcely any that are not as old as the hills.

Our readers may perhaps recollect the astonishment with which the talented writer of the series of articles on the Chemistry of Gas Lighting, which appeared some years since in our columns, found that he had been forestalled by M. Couerbe in his experiments on the liquids condensed by the compression of gas; and in his enthusiastic language he predicted the possibility of the discovery by some enterprising Layard of gasholders, retorts, street-mains, meters, and all the apparatus of modern gas-works among the ruins of Thebes. We have been similarly astonished by the discovery just made, that the purification of gas by metallic oxides—by oxides of iron in particular, the disputed invention of which process has given rise to such prolonged and costly litigation—was *actually patented in England upwards of half a century ago.* Nor need we go so far as Thebes to find the records of this scientific antiquarian fact. In the tenth volume of the second series of the "Repertory of Arts," at page 81; and in the 103rd page of the seventh Roll's Chapel report, the invention is mentioned and described; and even in our own Journal of July 10th, 1854, the invention is noticed as the second in the list of patents connected with the manufacture of gas, coming next after the celebrated patent of Mr. Winsor. Yet, strange to say, no one of the existing generation seems to have been aware of the objects of the invention, and the original specification might have mouldered unknown in the vaults of the Roll's Chapel, had it not been brought to light by fortuitous circumstances, so remarkable that they might form the foundation for an interesting romance.

A workman named Francis Heard, employed in a pianoforte manufactory, having fallen into ill-health and poverty his shopmates set on foot a subscription for his relief, and on making application to the officials of a gas company in the neighbourhood it was represented that the father of Heard was one of the pioneers of gas-lighting, and had made several improvements in its manufacture. This statement induced further inquiry, when documents and papers were produced to establish his father's claim to that distinction. One of these was a patent granted to Edward Heard on the 12th of June, 1806, for "obtaining inflammable gas from pit coals, to burn without producing offensive smell." The specification of the invention describes a method of purifying gas by dry lime, and it also indicates in clear, precise, and unmistakeable terms, the purification of gas by such metallic oxides as will absorb sulphuretted hydrogen, and amongst them are distinctly specified oxides of iron! Thus Messrs. Croll, Laming, Hills, and the long array of subsequent patentees, seem to have been forestalled by an inventor whose very name had been forgotten.

At the time when Heard's patent was granted, Messrs. Boulton and Watt's factory at Soho, Phillips and Lee's cotton mills at Salford, and Mr. Lodge's mill at Sowerby Bridge were the only establishments lighted with gas, which was then supplied to the burners without being purified. Mr. Clegg was supposed to have been the first who attempted to apply lime to absorb the sulphuretted hydrogen from impure gas, and his purifying process by wet lime was introduced successfully in lighting Stonyhurst College in 1807; but it now appears that Mr. Edward Heard was the first person who thought of applying lime for that purpose, though the mode of application was different. His process was essentially for the purification of gas by dry lime, which he secured by his patent in 1806; but the use of dry lime was again patented in 1817 by Reuben Phillips.

Heard seems to have been a man of great ingenuity, for, in

addition to his patent of 1806, he took out one in 1819 for a portable gas lamp; another in 1829 for producing artificial light; and he also obtained four other patents for different objects. This was at a period, it must be borne in mind, when an English patent could not be completed for less than £120, and poor Heard suffered the fate of most other inventors who venture among the quicksands of patent monopolies; he exhausted such means as he possessed in endeavouring to secure his inventions and bring them to perfection, and died in great poverty, without having derived any advantage from his many patents. His son, disabled from work, now appeals to the gas community for help, as the inheritor of his father's unrequited claims for the important improvements he introduced in the manufacture of gas; and it is this appeal that has caused the discovery of the original inventor of the purification of gas by lime and by the oxides of iron.

The specification, which we subjoin *in extenso*, is marvellously lucid and precise, considering the period at which it was drawn, and though good patents might subsequently have been obtained for improvements in the application and in the preparation of the materials named as fitted for the purification of gas, there can be no doubt that at the expiration of the patent in 1820, the use of such metallic exides as are active in the purification of gas from sulphuretted hydrogen, whether hydrated or anhydrous, was thrown open to the public. The combination of those oxides with other substances to render them more effective, would indeed be the subject of a valid patent, though the use of the oxides *per se* could not be claimed; neither could the subsequent restoration of their active properties by exposure to the air, for that is a process of nature. This is the point on which we apprehend the judgment in the case of *Hills v. the London Gas Company* will chiefly turn, and we therefore await the issue of that case with considerable impatience.

Heard thus describes his invention in his specification:—

"I stratify lime with the coals in the retort, stove, or other close vessel in which they are placed for operation, or suffer the gas when produced to pass over lime previously laid in an iron or other tube, or any other shaped vessel adapted for the purpose, and expose it to the heat. After the gas has been conducted into a refrigeratory, and all condensible matter is deposited, it is then suffered to enter the conveying tubes, and burned in the usual manner. My reason for employing lime for this purpose is, that from a series of analytical experiments I have detected the presence of sulphur in a great variety of the coals which are consumed in this country, and as I consider the suffocating offensive smell so perceptible during the combustion of the gas obtained in the ordinary way to arise from the products of that combustion, principally the sulphureous acid gas which is then generated, I present lime in substance to the sulphur as it is disengaged by heat from the coals, and through their mutual affinity arrest it in its progress, and form a sulphuret of lime or hydrosulphuret, depending on the circumstances of the operation. I have reason to conclude that any of the fixed alkalies or alkaline earths, such as barytes, strontian, and other similar earths, or carbonate of lime, when exposed to a degree of temperature sufficient to drive off the carbonic acid gas, might be substituted for lime, but from economical motives, as well as constant success, I prefer the agency of lime. It must, therefore, be clearly understood that lime in substance or a dry state, the fixed alkalies or earths possessing alkaline properties, or such metals, or their oxides, as possess a sufficiently strong affinity with sulphur and sulphurated hydrogen as to answer the end desired, such as iron, manganese, zinc, copper, lead, &c., when mixed with the coals laid on their surface, or put into separate vessels, through which the gas is made to pass, are calculated in a greater or less degree to divest the gas of the cause of the offensive smell; but I distinctly state that I have always found lime (if caustic the better) stratified with coals and exposed to heat the most economical and successful process."

It will be observed that, though the patentee contemplated mixing the purifying materials with the coal in the retorts, yet he provided for their being used in separate vessels, through which the gas might be conducted.

The moral of this "strange, eventful history" is, that the patent laws in their former state, and even in their amended condition, were and continue to be an injury to inventors and a grievance to the public. Poor Heard's fate has but too many parallels. Deluded by the hope of making a fortune by his inventions, if he could only secure them to himself, he was led on to spend much money that he could ill spare, and to turn his thoughts and direct his labour from profitable employment to works that brought no return, until, worn out with anxiety and disappointment, and weighed down by grinding poverty, he sank into the grave, and his inventions were altogether forgotten. And yet, worthless as they proved to him, we find those inventions reproduced by others, as new, again and again, and secured for those claimants by illusory patents, for which large sums were paid without their being worth a farthing; except, indeed, as the means of extortion in the hands of wealthy patentees, who might thus fraudulently obtain the means of threatening actions at law for the infringement of patents which they had no right to possess. Under the old patent law this state of things was almost inevitable, for the records of inventions were concealed in mysterious rolls, difficult of access, and more difficult to be deciphered. Nor is the case very much improved at present, for though commendable means are taken to give early publicity to the specifications, the multiplicity of patents which are sold at a lower price to all applicants, and the consequently increased complexity of competing claims, produces a perfect maze of confusion. To put an end, as far as we can, to this source of litigation, we purpose making an analysis of the specifications of all the gas patents granted before 1854, and of forming a collection of the specifications to which our subscribers can have access.

DR. PARKIN ON THE CAUSATION AND PREVENTION OF DISEASE.

Books which are not published by proprietors of Reviews, and which are opposed to the fashionable theories of the day, make their way with difficulty to public favour, and are long unknown, even to those who may feel strongly in the same manner as their authors. So it has been with Dr. Parkin's essay on the Causation and Prevention of Disease; and we plead guilty at once to having been ignorant of its existence until a very recent period. The pleasure we have derived from the perusal of the book was not, therefore, diminished by any exaggerated anticipations; and the opinion we have formed of its merits has been solely derived from an attentive and impartial examination of its contents.

Dr. Parkin is, in fact, one of that very rare class of philosophers who dare to think, and to draw inferences from the facts they observe, without any slavish reference to the official doctrines which may be prevalent in their day. At the same time we must also say that we can detect in the Doctor's book no love of paradox, no affectation of originality, which should induce us to believe that he has aimed at founding a school of his own, in contradistinction to the one he has felt bound to protest against. The book is a sound, conscientious, and ably written production; one which may be, and is, no doubt open to much technical criticism, and which may be erroneous in some of its conclusions; but it is a work which will always challenge attention, and amply repay the attention bestowed upon it. If Dr. Parkin had done nothing else than to protest against the hastily received theories with respect to the causation of disease, so unfortunately elevated by fashion into the principles of Sanitary Science, he would have rendered service to humanity; but this species of negative service has been increased by the promulgation of some very able, even though perhaps doubtful, opinions, with respect to the prevention of disease.

Like all original thinkers, Dr. Parkin seems, at a very early period in his career of usefulness, to have come into direct antagonism with the representatives of official science; and, like every one else who has dared to think differently from Messrs. Chadwick, Simon, and their clique, he has found that the most bitter opponents to anything like free open discussion were precisely the men who have made the loudest protestations about their desire to diffuse the truths of Sanitary Science. This part of Dr. Parkin's tale is a funny one, and it so strikingly reminds us of the principles avowed by the leaders of the Belgian *Congrès de Bienfaisance*—viz., "to suppress everything like discussion"—that we feel bound to call the attention of the public to the matter. Dr. Parkin was sent by the Government to inquire into the phenomœna connected with the outbreak of Cholera in the West India Islands about 1854; and on his return he addressed a long Report to the Secretary of State for the Colonies as to the result of his inquiries. This Report seems to have been referred to the General Board of Health for examination, previously to publication; and that body, finding that some of its own doctrines were distinctly attacked, has not scrupled to recommend the suppression of the Report, on the usual red-tape principle, that "the publication of Dr. Parkin's opinions would be detrimental to the cause of Sanitary Reform." Was Mr. Cowper the Pope who claimed infallibility for his followers? or was he the man who foolishly could believe that the discussion of truths could ever be injurious to their diffusal? Whoever might have been the narrow-minded, if not positively dishonest, person who thus did his best to prevent the examination of the received opinions as to the causation and prevention of disease, we can only assure him that the result of his conduct will ultimately be precisely the reverse of the one he had apparently desired. Amongst thinking men, the anxiety to avoid discussion will appear simply to have been inspired by a fear of its results; and it will

also raise a prejudice in favour of the opinions it has been felt advisable to suppress, in order that the present holders of pay and patronage may retain their hold upon the loaves and fishes of office. But what a commentary is the whole of this story on the pretensions of the placeholders of the General Board of Health to disinterested zeal for the advancement of what they are pleased to call "Sanitary Science!"

Dr. Parkin commences his inquiry into the causation of disease by an examination of the influence of those agents which are considered, by the very equivocal authorities of the General Board of Health, to be the most active in the productio and development of both epidemic and endemic diseases. This portion of his work is very curious, and it leads to some highly important conclusions, though we think that many of the details may be open to serious question. It would really seem that much of the evil stated by the General Board of Health to be produced by overcrowding dwellings, by the presence in the atmosphere of large towns of miasmas produced by the fermentation and decomposition of organic substances, by the comparative elevations of the districts observed, or by the use of bad water, only exists in the imaginations of the men who have propounded those easy theories for explaining the mysterious subject referred to them. Dr. Parkin, we also think, very satisfactorily shows that the mortality and the distribution of epidemics takes place under such anomalous conditions, according to those theories, as to justify the suspicion that they are utterly incorrect. If this be true, it follows that the attention of local boards of health, which has been of late directed exclusively to the execution of measures for the purpose of removing the fallacious sources of evil, have been misdirected; and that many of the so-called Sanitary measures had far better not have been commenced. We are not disposed to admit this particular inference; for though we are prepared to admit that there has been uttered a strange amount of what we do not hesitate at once to call "humbug" about the unsatisfactory Sanitary conditions of our "large towns and populous districts," we are still convinced that roomy habitations, good sewerage, and good water, are amongst the primary elements of a comfortable, and therefore a healthy, existence. Sad experience, moreover, proves that the miasmas from decomposing organic matter *are* frightful causes of disease, though the disease itself is certainly not of the kind we should have been induced to expect according to the theories of the General Board of Health—nor does it occur in such an invariable manner as to enable us clearly to identify the relations of cause and effect in the matter. We are, however, quite prepared to agree with Dr. Parkin that, whilst the public authorities of the country ought not to have left this class of remedial measures undone, there are many others of equal importance which they have neglected to do. Amongst the first of these omitted duties may be cited the neglect to diffuse correct Sanitary knowledge in a popular form, and the disingenuous manner in which all discussion on the subject is suppressed. All parties ought to strive for the attainment of truth in subjects literally of such vital importance; and the best method of attaining this object is unquestionably to do as Dr. Parkin has done—viz., to extend our observations over the widest possible field, and to refrain from adopting any hasty conclusions upon questions of so abstruse and so complicated a nature.

After Dr. Parkin has discussed the fashionable theories of the causation of disease, he proceeds to state his own opinions on the subject; and in so doing he displays the same comprehensive, painstaking grasp of his subject we have before noticed. There is much interest, and much valuable information, too, in the observations of the Doctor upon the phenomœna observable, in tropical and even in temperate regions, in the production of malaria, and the occurrence of endemic disease in certain localities; and Sanitary authorities would do wisely to reflect upon the apparently inexplicable circumstances under which those endemic diseases become epidemic. The cause Dr. Parkin assigns to this peculiar malaria is, we may briefly state, volcanic action, a theory he had already published in 1845; but perhaps it would have been better if he had confined himself to the second definition he gives—viz., an agent extracted from the interior to the exterior of the earth. Now, it is possible that this may be the true solution of the existence of endemic diseases of certain descriptions in certain places; but Dr. Parkin seems here, to us, to have fallen into the error he reproaches the Board of Health with committing, and he has applied universally a law which, from geological reasons, we are convinced can only be local. Nevertheless, there is something very startling in the fact that the endemic diseases of Holland, Spain, the Compagna di Roma should be so singularly identical; and there is something more remarkable still in the fact that of late years epidemic diseases should have attacked potatoes, vines, silkworms, fish, crabs, leeches, &c., animals that live in water as well as those which live in air. The fact is, that all we know in these matters is, that we know nothing; and whilst we ourselves avow our obligation to Dr. Parkin for his contributions to our present small store of recorded facts, we cannot unhesitatingly admit even the theories he has propounded.

It may not be out place in this JOURNAL to call attention to a passage at page 75 of Dr. Parkin's book, in which he alludes to the effect "produced by opening the ground with a spade or the plough for the first time in warm climates." We had, indeed, occasion to record the fearful loss of life which attended the laying down of the gas-pipes in Calcutta, and we have personally had occasion to observe the same law in operation, though on a more limited scale, in parts of the North-West of Europe. This danger should not be lost sight of by those who may be called upon to execute similar works in positions where there is a probability of their being exposed to the exhalations from freshly moved ground in similar localities.

In the last part of Dr. Parkin's work—viz., the indication of the means to be adopted to prevent disease—there are equally many important observations and many startling facts recorded to show the utter fallacy of the doctrines of the General Board of Health. Not only does the Doctor dwell upon the oft-told tales of the outbreaks of disease at Croydon and Sandgate, but he actually shows that the mortality from zymotic diseases has increased in London steadily and progressively since 1841, or since the period when the so-called Sanitary measures were first undertaken on a large and consecutive scale. This is a very serious matter, and it throws, under any circumstances, great doubts upon the whole of our received opinions on Sanitary Science. Of so grave a character, moreover, are those doubts, that we can only regard the disposition of the General Board of Health to smother their discussion, as a culpable dereliction of duty. Dr. Parkin also propounds a theory which, if true, would go to prove that the Smoke Nuisance Abatement Act was a positive evil. He states that the comminuted carbon in the London atmosphere is a valuable element in the maintenance of its healthy condition; and that the combustion of coal, by which soot is given off, is more advantageous to public health than the combustion of other fuels which do not emit the peculiar form of comminuted carbon thrown off from coal. However this may be, Dr. Parkin states that carbon in some form, or its derivative carbonic acid, will be found to be the only true remedy for, or preservative against, the effects of malaria; and the necessary corollary would be, that efforts should be made in places exposed to epidemic or endemic diseases to diffuse those agents.

We are not by any means, as we before said, prepared to admit all these opinions of Dr. Parkin's; and certainly there are many propositions advanced by him with respect to the effect of the emanations from gas-pipes, or to the quality and conditions of many of our municipal water supplies, with which we differ in the most decided manner. But even when mistaken, Dr. Parkin is evidently desirous, above all things, of getting at truth. His observations are always keen and original, and he has (no small merit now-a-days) produced a scientific treatise devoid of empty verbiage, like the writings of Mr. Simon, or of insolent dogmatism, like those of the Chadwickian school. Dr. Parkin's book should be read by all who are interested in Sanitary investigations; and even the discussions it will provoke must advance the true interests of science far more effectually than the "caw me, caw thee" style of papers read in the packed Committees of the Association for the Promotion of (so called) Social Science. The essential point is, that the public should learn that the opinions propounded in high quarters are far from receiving the unanimous consent of competent inquirers.

Circular to Gas Companies.

WE have already intimated that the authorities at the Treasury appear to consider the duties imposed upon them by the 3rd section of Lord Redesdale's Act, "for regulating measures used in sales of gas," will be complied with, by the deposit in the office of the Comptroller-General of the Exchequer of a standard of 62·321lbs. weight, a vessel capable of containing

that weight of distilled water, and of another vessel by which an equal bulk of atmospheric air can be transferred into a gasholder; and by the further transmission of stamped duplicates of these instruments to the Lord Mayor of London, and to the chief magistrates of Edinburgh and of Dublin. This may be the opinion of the scientific advisers of the Treasury, but those upon whom it devolves to carry the Act into practical operation will, we apprehend, be unanimously of opinion that these instruments will prove entirely useless unless the Exchequer authorities are authorized to go a step further, and to stamp the instrument which alone is practically used in testing meters; we mean, of course, the testing gasholder. Indeed, we cannot see how any conviction can take place under the Act, unless these gasholders bear the Exchequer stamp. We have before us the experience of the Liverpool corporation gas committee as a warning not to entrust incompetent people with the graduation of such instruments. There, Mr. King found an error in an apparatus made by an experienced London manufacturer (under the direction of the meter-inspector appointed by the Corporation of London in compliance with the Great Central Company's Act), exceeding the deviation from truth tolerated by Lord Redesdale's Act; and if such an error be possible under such circumstances, into what confusion will the country be thrown, if each inspector appointed under the new Act be left to graduate his own instruments! The few appointments already made indicate the class from which these officers will be selected; they may be honest, upright and conscientious persons, but still be perfectly incompetent to discharge duties such as the scientific advisers of the Treasury appear disposed to throw upon them. But if the section of the Act be carefully examined, we apprehend that "gasholders," in the popular acceptation of the term, are included in the instruments to be deposited, the discretion invested in the Treasury applying only to their dimensions. The section says—

"Within three months next after the passing of this Act, models of gasholders, measuring the said cubic foot, and such multiples and decimal parts of the said cubic foot as the Lord High Treasurer or the Commissioners of Her Majesty's Treasury of the United Kingdom for the time being shall judge expedient; and from time to time after the expiration of the aforesaid period of three months, models of such further multiples and decimal parts of the said cubic foot as the Lord High Treasurer or the said Commissioners shall from time to time think expedient, shall be carefully made with proper balances, indices, and apparatus for testing the measurement and registration of meters, and such models shall be verified under the direction of the Lord High Treasurer or the said Commissioners, and when so made and verified shall be deposited in the office of the Comptroller-General of the Exchequer at Westminster; and copies of the models so from to time to deposited, verified as aforesaid, shall be sent to the Lord Mayor of London, and the Chief Magistrates of Edinburgh and Dublin, and to the Chief Magistrates of such other cities and boroughs, and to such other places and persons in Her Majesty's dominions, as the said Lord High Treasurer, or the aforesaid Commissioners, may from time to time direct; and the said Lord High Treasurer, or the said Commissioners, shall appoint a competent person or persons to design and make, subject to the approval and by direction of such Lord High Treasurer or the said Commissioners, stamps of a uniform design to be used for stamping meters throughout the United Kingdom, with only such variations of numbers or marks thereon as shall be sufficient to distinguish each inspector's district."

Now, it is clear from the context that the word "balances" means "counter-balances" or "counterpoises," and not scale-beams to be used in determining the accuracy of the cubic foot measure, a duty thrown upon the Exchequer, and not upon the inspectors. What the Treasury have really to provide are, in the terms of the section, "models of gasholders containing such multiples and decimals of the cubic foot as may be deemed expedient, with proper (counter) balances, indices, and apparatus for testing the measurement and registration of meters;" and no practical man will venture to assert that any of the instruments or apparatus now deposited in the office of the Comptroller-General of the Exchequer comply with this description. If the Act is to be anything but an instrument of vexation and a source of annoyance to gas companies and to meter-makers, it should be fairly launched, and not suffered simply to float into operation without compass to guide or helm to direct its course. That such will be the case if the scientific advisers of the Treasury persist in their refusal to include gasholders in the list of instruments to be verified by the Exchequer authorities is certain; and so imminent do we consider this danger, that prompt and urgent representations to the Treasury are, in our opinion, required to prevent such a miscarriage of the intentions of the promoters of the Act as are clearly indicated by the spirit in which it is framed. To shuffle off upon the inspectors functions which the Exchequer authorities ought to perform, is to virtually defeat the whole object of the Act, and to place in inexperienced and unskilful hands powers which nine-tenths of them will be incompetent to administer properly. There is yet time to prevent this, and we trust that in the brief interval allowed for the final arrangements, measures will be taken which may have the effect of obviating the inconveniences we have pointed out.

In previous numbers of this JOURNAL we have published the regulations in force for testing gas-meters in France, Belgium, and the State of New York, and in another column of our present issue will be found those adopted in Prussia in 1853. They are highly creditable to the Government of that country, considering the state of knowledge at that period, and though applicable to only one description of meter, they show that its construction and use had been carefully studied. The direction that the meter should be filled with water till it overflowed at the bottom plug was a guarantee against the possibility of its being over-charged so as to register against the consumer; and the prescribed use of atmospheric air in testing meters has been often insisted upon in these columns as the means of procuring greater accuracy in the observations. It is not without some humiliation that we see foreign nations have so long preceded us in legislating on this question in so sensible a manner.

Under the title of the *Gas Consumer's Manual*,* Mr. T. L. Marriott, the parliamentary agent concerned in preparing and passing Lord Redesdale's Act through Parliament, has published a digest of its provisions, more especially in reference to their legal effect and bearings. The work makes no pretensions to lay down any rules for the guidance of inspectors, but very properly suggests that it would be convenient if the public authorities would direct a set of instructions to be prepared and printed for distribution, to ensure uniformity of proceeding, and to prevent misconceptions of the Act. These instructions, it is suggested, should comprise—

1. The extent of his district.
2. The situation of his office.
3. The hours of attendance.
4. The form of book to be kept for entries of testing, stamping, and rejection of meters, and the form of certificate for him to be given when required.
5. To whom the fees received for stamping are to be paid quarterly, whether to the city treasurer, borough treasurer, or what other authorized person.
6. The amount and nature of the inspector's recognizance.
7. In what manner meters shall be stamped so as best to prevent fraud.
8. What quantity of gas, within the discretionary limits named in section 13 of the Act for the test for soundness, shall pass during the test of each meter.
9. How the inspector shall secure impartiality in the order in which he stamps meters tendered to him.
10. How he shall proceed under the authority of a Justice to enter houses, &c., according to section 20.
11. Some hints on the testing manipulations might be conveniently added.

Of course no such instructions, if given, can have any legal force, as each inspector must exercise his own discretion in interpreting the Act; but a right direction would be given to their judgment were such instructions issued under the authority of any public department; and we trust the suggestion will be duly considered in the proper quarter.

A legal contemporary drew attention some time since to the absence of any provisions for the recovery of penalties incurred in England under the Act; but on reference to the 19th section of the 11th and 12th Vic., cap. 43, it will be found that where the mode of raising or levying penalties, or of enforcing payment of the same, is stated or provided in any Act, "it shall be lawful for the Justice or Justices to issue his or their warrant of distress," or in default of goods for distress, the Justice may commit the defaulter. The framers of Lord Redesdale's Act, therefore, deemed it unnecessary to introduce any special powers for enforcing the payment of penalties in England.

Next to the means of determining the accuracy of gas-meters, the means of ascertaining with precision the illuminating power of gas occupies for the moment a considerable share of public attention. All the Gas Acts passed within the last few years have contained clauses fixing the minimum illuminating power of the gas to be supplied; but, as our readers are aware, considerable latitude has been allowed to the mode in which that illuminating power has been ascertained. Rooms with dead black surfaces, and others covered with neutral-tinted

* Kelly and Co., Old Boswell Court, Strand.

paper, have served as photometrical laboratories, in which reflected and diffused light have been more or less completely cut off; but Mr. F. J. Evans is, we believe, the first person who has suggested the complete enclosing of the Bunsen photometer in a box in such a form that it can be used not only in the laboratory, but for testing the illuminating power of public lamps *in situ*. For the former purpose he constructs a rectangular wooden box, about 14 or 15 inches square, and about 6 feet long, in which the greased screen is fixed at the distance of 50 inches from the gas-burner. This box has a ventilator at each end properly protected by hoods from the action of downward currents of air, and is blackened inside. The side towards the observer is formed of three hinged doors, the centre one containing a glazed aperture through which the screen may be observed. The candle moves backwards and forwards in a slot in the bottom of the box, and an external pointer indicates upon the scale its precise situation. Neither the gaslight nor the candle are seen by the observer, whose eye is therefore undisturbed by their rays in placing the candle at the exact point where its rays balance those emitted by the gas. For street purposes Mr. Evans uses a box of which the frame is of light wood filled up with black cloth, for the sake of rendering it portable. This, with a pair of tressels to carry one end of the photometer, is all that is required, as the other end rests upon the lamp-post from which the lamp is temporarily removed during the experiment. Mr. Wm. Sugg, of Marsham Street, Westminster, has been authorized by Mr. Evans to manufacture these instruments; and if Mr. Hughes has still any doubt as to the possibility of ascertaining the quantity of light given by a public lamp *in situ*, those doubts may be easily set at rest.

Two meetings on the metropolitan gas question have been held since our last. In one of these, held at Pimlico, Sir John Shelley indulged in self-gratulations on the part he had taken in conducting the case of the gas consumers before the Parliamentary committee. We have no desire to detract from the good opinion which Sir J. Shelley appears to entertain of himself and of the value of his labours, but it is more laughter-stirring than ordinary risible nerves can control to hear him assert, "I consider I made my case so good as to drive the companies into a corner; *hence the question was postponed to next session.*" This was a thoroughly Irish victory, the victor having been so successful as to compel the enemy to drive him from the field. At a meeting of the delegates, Mr. Beal commented in no friendly spirit on Mr. Barlow's proposition for an amalgamation of the metropolitan gas companies, and attempted to show that it would be an unfair arrangement to the gas consumers. Those comments need no remark, for the plan has been published, and we leave our readers to determine whether or not it is open to the objections raised against it. But when Mr. Beal characterizes as "an astounding statement" that the vestries and district boards are anxious to perpetuate the impolitic system of compelling gas companies to supply gas to the street lamps at a considerable reduction on the prices charged to private consumers, we feel bound to remind him that the statement at which he is now so astounded was sanctioned by him at no remote period, and that he placed his name to documents in which it was expressed. Among the papers published by the managers of the metropolis gas inquiry were two returns, giving the prices paid for public and private lighting in the provinces, the object of such returns being to establish the same principle in London as obtained in country towns. In the first of these papers the following is one of the conclusions drawn from the information obtained—"That in many cases the Legislature has fixed a distinct and much lower price for the public lighting than for the private consumer." In the second paper we find it stated that "The average of the whole thirty-three towns gives the price of gas in the public lamps equal to 75 per cent. of that paid by the private consumer;" and in the same paper returns are noticed from towns in America to show that the price paid for public lamps in several places in the United States is only half that paid by the private consumer. If the object of these returns, to which Mr. Beal's name is attached, were not to establish the principle that the public lamps should be lighted for less than is charged to private consumers, it is difficult to conceive for what purpose they were collected and published at so much trouble and expense. In another paper, dated September, 1859, to which Mr. Beal's name also appears, the object is thus distinctly specified:—"In answer to supposed objections, it has been said by the gas companies that it is impolitic for local authorities to seek for extraordinary reductions in the price of public lighting, and they contend that the private consumer must pay for such reductions in the shape of an increased charge to himself. It is probable there never was any force in this argument, under any circumstances. Still less will it have any force when the maximum price shall be fixed for the private consumer. Indeed, the managers feel that arguments in favour of the *lowest possible price for public lighting* are almost insulting to the common sense of those whom they address." It may be asserted, indeed, with truth, notwithstanding Mr. Beal's present anxiety to repudiate unequal charges, that the gas agitation in the metropolis during the last two years originated in an attempt by the Chartered Company to equalize the price of gas supplied to the public lamps and to private consumers in a small part of the parish of Marylebone.

At the meeting of the delegates, Mr. Beal read a document which he has sent to the Home Secretary containing a statement of their case. This document, which will be found in another column, for the most part merely reiterates statements that have been already refuted. In mentioning the circumstances in which the charges for lighting the public lamps have been raised since the districting, some facts are concealed which, when stated, will give a different view of the case. But the main question to be determined is, whether the prices now charged are unreasonable. As the notion of compelling gas companies to supply gas to the street lamps at a lower rate than to private consumers is now repudiated, it will not be difficult to ascertain whether there is any real ground for complaint. The advanced contract price charged by the Chartered Company in the parish of Marylebone is 70s. per lamp per annum, burning for 4304 hours, at the rate of 4 cubic feet per hour; therefore, after deducting 15s. per lamp for lighting, extinguishing, painting, and repairing, the price per 1000 feet of gas consumed amounts to only 3s. 4d. Even if we take the Holborn district, in which a higher price is charged than in any of the others complained of, the cost of the gas supplied to the public lamps does not exceed 3s. 9d. per 1000 feet. In this manner, as in most other instances, when any specific grievance alleged by the delegates is examined, it entirely disappears.

Correspondence.

MR. MILLER'S REPORT ON LIVERPOOL GAS.

SIR,—Let us hope Mr. Miller will benefit by your advice, and not write an essay on "Photometry" until he shall have made a "good few" experiments with all sorts of burners and in variable qualities and quantities of gas. It has been my privilege, times and oft, to test the illuminating power of Liverpool gas with a "suitable burner," as the Act reads, and I never could consume it at the rate of 5 feet per hour without abundance of smoke, whilst at 4 feet the light has varied from 19 to 21 standard sperm candles, which is equivalent to at least 26 candles for a burner consuming 5 feet per hour. We are not told the dimensions or construction of Mr. Miller's argand and chimney, but it seems to quail before the "fishtail" most marvellously, to the astonishment of us southern manufacturers of gas from Newcastle coal. GEO. LOWE.

Finsbury Circus, Jan. 13, 1860.

Register of New Patents.

1594.—WILLIAM KNAPTON, of Albion Foundry, Monkbar, in the city of York, and ADAM AITCHISON, of Knottingly, in the co. of York, for "*Improvements in the manufacture of gas.*" Patent dated July 5, 1859.

This invention consists in manufacturing gas from materials comparatively valueless, with more speed than heretofore, and at a nominal cost; a small apparatus only being required to manufacture large quantities.

The mode of carrying this invention into practice is as follows:—Into suitable retorts are placed bark knots, or the refuse bark of the tan pits, or the bark of other trees, or the produce of oak and other trees; shipwright's wood chips, turner's chips, or other such like chippings of timber; waste from saw-pits, such as sawdust, and other refuse; the refuse of timber felled and sawn on gentlemen's estates; the same being previously thoroughly dried, either in the sun or in suitably constructed kilns, before entering the retorts.

The chips, dust, or bark knots, are then treated in a similar manner to the coal in the manufacture of coal gas, but produce a purely hydrogen gas, with nearly the same illuminating power as coal, without the unpleasant smell arising from the coal, there being no dirt, &c.; it is very easily manufactured.

In order to give the gas so produced the greatest amount of illuminating power it is passed over or through spirits of naphtha, camphine, or other suitable spirit that will give it the required illuminating power, and which gives out a much more brilliant light than coal gas.

The claim is for the manufacture of gas from the refuse of timber, chips or dust, bark knots, and the like; the same being previously dried in the manner and for the purpose described.

1603.—Joshua Horton, of Dudley, in the co. of Worcester, machinist, for "*A new or improved gas-meter.*" Provisional protection only obtained. Dated July 6, 1859.

This new or improved gas-meter consists essentially of a vessel, the open mouth of which is turned downwards and immersed in quicksilver, oil, water, or any other liquid. The said vessel turns upon an axis connected to one of its sides, and is enclosed in a case or closed chamber. A valve, external to the closed chamber, is connected with the axis upon which the moveable vessel turns, and acts in the following manner:—When the moveable vessel has risen by the delivery of gas underneath it, the said valve shuts off the gas from the supply-pipe, and permits the gas in the vessel to pass to the delivery-pipe. The vessel sinks as the gas passes out, and the gas is, at the same time, admitted to the closed chamber, which fills as the moveable vessel empties itself. As soon as the said moveable vessel has sunk to its full extent, and the closed vessel in which it works has been filled with gas, the valve shuts off the supply to the closed chamber, and opens the communication between the said chamber and the delivery-pipe. At the same time the supply is directed to the moveable vessel, which is shut off from the delivery-pipe. By the rising and falling of the moveable vessel in the closed chamber there is formed, as it were, two vessels, one of which is filled from the supply-pipe, while the other is emptying itself into the delivery-pipe. The working of the valve or valves, by which the passages are opened and closed at the proper times, is effected by the motion of the moveable vessel, and by the said motion the number of ascents and descents of the moveable vessel, and the amount of gas which has passed through it to the closed chamber, is registered.

Although for convenience of description only one moveable vessel working in the closed chamber has been described, yet two or more such vessels may be employed, together with the requisite valves. The valves which it is preferred to employ somewhat resemble the slide-valves of a steam-engine; but it is not necessary to describe the particular construction of the valves, nor the mechanical arrangements by which the said valves are worked from the moveable vessel, as the particular construction of the valves, and the said mechanical arrangements, may be varied, without departing from the nature of the invention. Sometimes the moveable vessel is made to rise and fall with a vertical rectilinear motion.

1626.—Elijah Livermore, of New York, U.S.A., for "*Improvements in the manufacture of burning fluids for illuminating and heating purposes.*" A communication. Patent dated July 8, 1859.

The nature of this invention consists in the manufacture of a composition of matter which is susceptible of being acted upon by, or combining with, atmospheric air, or other gas, in such a manner as to produce a cheap and brilliant light, and an economical heat of great intensity.

In order to effect this object wood tar or coal tar and crude turpentine are first prepared as follows. The tar or turpentine is heated until sufficiently thin, and is then thoroughly agitated with from one to two parts of sulphuric acid. In treating coal tar from 5 to 10 per cent. of the acid is used; it is afterwards washed out by means of several changes of hot water, and the tar and turpentine is then thoroughly mixed, equal parts of each being preferred, although the process will bear various proportions. In using coal tar it should be stated that it is advantageous to follow the acid treatment by chloride of lime or some other deodorizing agent. This mixture is then placed in a common still, with or without a portion of water. Into the top of the still an air pipe is placed, which is connected with a bellows or blower. This pipe should project to within one or two inches of the mixture. Another pipe enters this just above the still, and this latter pipe is connected with a generator or reservoir of hydrogen gas.

On heating the still to the desired point—say from 150° to 212° Fahr.—the air-pipe is opened, a moderate pressure is exerted upon the bellows, and, at the same time, air is let into the said air-pipe, about one-twentieth the bulk of air being used to that of hydrogen gas. The vapour thus driven over is passed through a coil of pipe immersed in ice water, and collected in a suitable receiver. The distillate is a peculiar combination of the more volatile ingredients of the tar and turpentine, and is eminently fitted for the purpose in hand. The use of the hydrogen pipe is sometimes omitted, and instead thereof, the distillate is placed in a deep jar, at the bottom of which are the materials for generating the hydrogen; and, in this case, it is found of advantage to surmount the jar by a cover, in which is placed a valve, opening upwards, and loaded with a weight of one or two pounds to the square inch. A great increase of product is obtained by mixing the tar and turpentine with about one-fourth of their united bulk of pulverized clay, previously to their being placed in the still. The compound above described is designated as No. 1.

A mixture is next prepared as follows. In a deep jar or vessel, surmounted, as in the former case, by a cover and valve, are placed the materials for generating hydrogen—say one ounce of zinc, two ounces of sulphuric acid, and four ounces of water. Upon this a mixture is poured consisting of half a pound of crude resin oil, one quart of coal naphtha—crude naphtha being preferred—half an ounce of Canada balsam, one-eighth of an ounce of gum camphor, and one quart of benzole. Having loaded the valve as before, the arrangement is allowed to stand for several hours, after which the oil is decanted and treated with chalk, to remove all acidity; and then, after it has become perfectly clear by repose, it is decanted into a bottle for use. This is called No. 2.

The third ingredient is caoutchousine, prepared by distilling caoutchouc at a temperature of from 130° to 205° Fahr., and again redistilling the oily product thus obtained at the lowest possible temperature. A liquid is thus obtained which boils at 90° Fahr., and which, when mixed even in very small quantities with the other hydrocarbons, greatly increases their illuminating power, and renders them more volatile. This is called No. 3.

The above ingredients being ready to hand, they are mixed and incorporated together. Among many proportions which have been tried, the following is preferred—viz., one quart of No. 1, two quarts of No. 2, and one ounce of No. 3. These are mixed by thorough agitation, and the mixture is then suffered to stand for one or two days. The clear liquid having been decanted from the precipitate which has formed, it is then ready for use. It is much improved, however, by another repose of two or three weeks. This liquid is distinguished as neubian oil A.

To the above quantity of the oil A, various proportions of highly rectified naptha or of benzole are added—say from one pint to a gallon—and by this means is produced a highly volatile combination, less flashy and less liable to condense the benzole, and yielding a better and more economical light. This is neubian oil B.

By omitting the benzole in oils A and B, and substituting for it from 10 to 50 per cent. of caoutchousine, there is produced neubian oil C, and this will work well at a very low temperature.

Neubian oil D, which is designed as a means of economical heat, is prepared by combining mixture No. 1 with about 5 per cent of common resin, 10 per cent. of resin oil, 20 per cent. of naphtha, and 10 per cent. of spirits of turpentine. To this compound small proportions of oils A, B, or C are added, when it is wished to increase the volatility of oil D. This oil requires to be warmed when in use to from 100° to 150° Fahr.

The method of using said neubian oil A, or its modifications, consists essentially in the use of a bellows, air-box, gasometer, or other means of generating a current of atmospheric air, hydrogen, or carburetted hydrogen gas, and directing said current of air or gas upon or into said neubian oil, and passing it thence by means of pipes to suitable burners. The temperature of the oil will be maintained at a degree corresponding with the purity of the chemical and the nature of the gas. For hydrogen or carburetted hydrogen gas the ordinary temperature of the oil is sufficient, as it is also for common air during the mild season of the year. But in cold weather the temperature of the said oil should be maintained at from 70° to 100° Fahr.

Atmospheric air is preferred on account of its great economy and its superior effects. In the use of from 5 to 8 cubic feet of air per hour, a flame is produced as large as that of ordinary coal gas, of very great illuminating power, and at a cheap rate. But largely diluting said carbonized or catalized air with common air, even to the extent of from 100 to 500 per cent., a heating flame of great purity and extraordinary intensity is obtained. For lighting alone, it is preferred to use neubian oil A, but oils B, C, and D, or mixtures of either or all four of the oils, can be used. For a heating flame it is preferable to use neubian oil D, on account of its superior economy; but, for the reason of its requiring a higher temperature it may be advantageously mixed with either or all of the other oils in a great variety of proportions.

The claims are for—

1. The use of caoutchousine only, in combination with the liquids herein described.

2. The liquids herein described as neubian oils A, B, C, and D, having the composition and properties before described, to be used singly, or in such relative proportions and admixtures as may be necessary to accomplish the purposes herein described and set forth.

1641.—Elijah Livermore, of New York, U.S.A., for "*Improvements in generating gas for the purpose of lighting and heating.*" Provisional protection only obtained. Dated July 9, 1859.

The object of this invention is to give to gaseous or carbonaceous fluids the properties of heating and illuminating, which it is proposed to effect in the following manner:—A suitably constructed apparatus is employed for the purpose of forcing air into and among the neubian oils described in the last specification (No. 1626), and all other gaseous or carbonaceous fluids whatsoever, for the purpose before mentioned.

PROVISIONAL PROTECTION

HAS BEEN GRANTED FOR THE UNDERMENTIONED INVENTIONS.

2917.—William Edward Newton, of 66, Chancery Lane, London, civil engineer, for "*An improved process and apparatus for extracting or separating paraffine from schistose or mineral oils and other hydrocarbons.*" A communication. Dec. 22, 1859.

2935.—George Kennedy Geyelin, civil engineer, of 462, Oxford Street, London, for "*Making transparent metallic twisted columns, pillars, tubes, &c., for bedsteads, gaseliers, building, warming, and other purposes.*" Dec. 24, 1859.

2941.—Edwin Smith, of the Marble Works, Sheffield, in the co. of York, sculptor, for "*Improvements in ornamenting metal pipes or tubes.*" Dec. 24, 1859.

2979.—Joseph Cliff, of Wortley, near Leeds, in the co. of York, fire-brick manufacturer, for "*An improvement in the manufacture of clay retorts.*" Dec. 29, 1859.

2981.—William Smith, of Kilmarnock, in the co. of Ayr, N.B., fire-clay manufacturer, for "*Improvements in the manufacture of fire-clay gas-retorts.*" Dec. 30, 1859.

13.—David Hulett, of 55 and 56, High Holborn, London, gas engineer, for "*Improvements in apparatus for measuring gas, and in apparatus for indicating the pressure of gas.*" Jan. 3, 1860.

15.—Frederick Hudson, of 227, Blackfriars Road, London, gas-meter manufacturer, for "*Improvements in gas-meters.*" Jan 3, 1860.

21.—George Davies, of 1, Serle Street, Lincoln's Inn, London, and 28, Enoch Square, Glasgow, civil engineer and patent agent, for "*Improvements applicable to nibs or burners for gas.*" Jan. 4, 1860.

NOTICES HAVE BEEN GIVEN OF INTENTION TO PROCEED WITH THE UNDERMENTIONED INVENTIONS.

1954.—Thomas Craven, of Scarborough, in the co. of York, plumber, for "*Improvements in ball-cocks or valves.*" Aug. 27, 1859.

2052.—John Henry Johnson, of 47, Lincoln's Inn Fields, London, for "*Improvements in cocks and valves.*" A communication. Sept. 8, 1859.

2055.—Thomas Webster Allsopp, of Castle Donnington, Leicestershire, for "*Improvements in portable gas apparatus.*" Sept. 8, 1859.

2708.—Edward Dorsett, of 76, Old Broad Street, London, tar distiller, for "*A new manufacture of heavy oil.*" Nov. 30, 1859.

2871.—Frank Clarke Hills, of Deptford, in the co. of Kent, manufacturing chemist, for "*Improvements in means and apparatus for purifying gas, and in the preparation and treatment of oxides of iron to be used in such purification or for other purposes.*" Dec. 17, 1859.

2941.—Edwin Smith, of the Marble Works, Sheffield, in the co. of York, sculptor, for "*Improvements in ornamenting metal pipes or tubes.*" Dec. 24, 1859.

Legal Intelligence.

COURT OF BANKRUPTCY.

BASINGHALL STREET, FRIDAY, JANUARY 13.

(*Before Mr. Commissioner* FANE.)

IN RE PRIOR AND PRIOR.

This was the day appointed for delivering the judgment of the court upon the question of certificate, the learned commissioner having postponed his decision from the 30th ult. to enable him to look through the voluminous accounts of the bankrupts' trading.

His HONOUR, in delivering judgment this morning, said: The bankrupts, Edward and Alfred Prior, ask for their certificate. The assignees do not oppose. The creditors, a very numerous body—some hundreds—appear to sympathise with the bankrupts. One creditor only comes forward to object. The father of the bankrupts had been in the coal trade for many years before 1849, when he died. On his death his sons, who had assisted him in the business, succeeded to it, and they continued it from 1849 till August, 1859, when they became bankrupt. For many years they had the assistance of a Mr. Gooch as a partner, but in 1856 Mr. Gooch withdrew, taking with him £4269 as his share of the profits, and receiving also £5680 as the value of the share of the goodwill of the premises. The profits were at that time really nothing, and the goodwill was therefore valueless. The debts proveable against the estate will be about £110,000. Under favourable circumstances, there may be £20,000 to meet expenses and pay a dividend; but if circumstances are unfavourable, the assets may not exceed £10,000. Looking at this general outline, it would not be unreasonable to say that the main features were not unfavourable to the bankrupts. They had for many years struggled hard for a living, and they fall with the sympathy of the great body of their creditors. Unfortunately, one of the creditors considers himself aggrieved, and therefore, though he is the only one who complains, still justice required that his complaint should be fully considered. It is in substance this:—He says, "Why did you victimize me at the last? You had been carrying on the business a great many years. Your circumstances had gradually grown worse, not better; and though, as between you and your old creditors, with whom you had been dealing for so many years with profit to them, it might have been excusable to obtain continued credit, why did you, in the very last year of your trading, when, unless you shut your eyes, and refused to see, you must have seen that bankruptcy was approaching nearer and nearer, why did you then commence with me? You contracted to take 26,000 tons of coals. What justification had you for making such a contract with a new customer?" The one creditor, stating these circumstances, calls upon me to vindicate public justice outraged in his case; and, whilst regretting the necessity under which I lie of yielding to his appeal, I cannot refuse to do so. Appreciating as I do the sympathy which nineteen-twentieths of the bankrupts' creditors feel for them, I cannot protect them from the indignation of the creditor they have wronged if he chooses to resent the treatment he has received. My judgment, therefore, is, that the certificate must be postponed for one year, and without protection. If the bankrupts are imprisoned I cannot release them under three months' imprisonment. Their certificates, however, when granted, will be of the second class.

Mr. LINKLATER asked for protection for twenty-one days, to enable the bankrupts to appeal.

Mr. LAWRENCE, who had opposed for Mr. Phillipson, of Newcastle, said he should not oppose the application, because he believed the indulgence would not be abused by the bankrupts absconding.

The COMMISSIONER, however, refused protection, stating that he was averse to establish a precedent of the kind.

Miscellaneous News.

THE GRIEVANCES OF THE METROPOLITAN GAS CONSUMERS.

The *Monetary Times* of the 31st ult. publishes a document which we have reason to believe is an extract from a communication made by the delegates to the Home Secretary, and by him transmitted to the parliamentary agent of the metropolitan gas companies for their reply to its allegations. The delegates are responsible for the premature publication of the document while the matter was *sub judice*; but, as publicity has been thus given to it, we venture to insert it as the official summary of the grievances which have formed the object of so much discussion. The document states that—

"The first districting by the metropolitan gas companies took place in 1851, between the four companies supplying the south side of London. These companies were the Surrey Consumers, the Phœnix, the London, and the South Metropolitan.

"It was stated in evidence before the committee of 1858, that the price charged for gas in Southwark previous to this districting was 4s. per 1000 feet, and that in 1852, immediately after the districting, the price was raised to 4s. 6d., and has ever since continued at the latter price.

"Great complaints have been made in Southwark of the bad quality and insufficient supply of gas since the districting. Consumers complain that, for the same amount of light, their gas bills are higher at 4s. 6d. than when the price was 6s. They complain that incoming tenants are compelled to pay arrears due by former tenants, and that the gas is arbitrarily cut off by the companies on the most trivial dispute.

"In 1855, the four companies which have been mentioned attempted to obtain an Act of Parliament to legalize their districting arrangements. The bill, however, was rejected by the House of Commons.

"The example which had been first set on the south side of the metropolis was soon to be followed on the north. The districting on the north side accordingly took place in 1857, and the final completion of the companies' arrangements was publicly announced in October, 1857, in the directors' report to the shareholders of the London Gas Company.

"The consequences of the districting were immediately apparent in the position assumed by the gas companies with respect to the public lighting. In the same month of October the Equitable Company declined to tender for lighting Marylebone and the larger part of the Westminster district, while the London Company, in a similar manner, declined to tender for lighting any portion of the Westminster district.

"The extent to which competition prevailed before the districting may be illustrated by reference to the companies which have successively obtained powers to supply Westminster and the adjacent districts.

"The Chartered Company obtained its first Act in 1810, and obtained powers to light the cities of London and Westminster, and the borough of Southwark. The City of London Company, only seven years afterwards—namely, in 1817—obtained powers to light precisely the same districts.

"Within the last twenty years two other companies—namely, the London and the Equitable—have also obtained parliamentary powers to light large areas, which were at the same time lighted by the Chartered Company.

"The same principle has been followed by Parliament in granting powers to the companies lighting both the eastern and the southern districts of the metropolis, while at the present moment there are three companies, each having full Parliamentary powers, to light the city of London.

"In the appendix to the evidence taken before the committees on metropolitan gas, in 1858-9, is a return from the gas companies, showing the extent to which competition has been abandoned by the companies under their arbitrary districting arrangements.

"The following statements, drawn chiefly from this return, shows the enormous extent to which this districting has proceeded.

"1. The Chartered Company has withdrawn from competition in sixteen miles of street, and has given up the following important districts:—

"*A.* An area, bounded on the north by Conduit Street, on the east by Regent Street and Waterloo Place, on the south by Pall Mall, and on the west by the Green Park.

"*B.* Also an area, bounded on the north by Holborn, on the east by Chancery Lane and the Temple, on the south by the River Thames, on the west by the Horse-Guards, St. James's Park, Marlborough House, the Haymarket, Leicester Square, and Crown Street.

"The Western Company has no Act of Parliament, but since the districting has withdrawn from competition in the outward of St. George, Hanover Square, and from the parishes of St. Martin-in-the-Fields, St. Anne, Soho, and St. Margaret, Westminster.

"The Phœnix Company has withdrawn from competition throughout nearly one-third of the whole area lighted by it before the districting. This company returns the whole length of streets at 206 miles, and has withdrawn from competition over an area which contains a length of more than 60 miles.

"This great company has assigned parts of its area to no less than five other companies, namely—Tooting and part of Streatham to the Mitcham Gas Company; the whole district of Deptford to the Deptford Gas Company; parts of St. George-the-Martyr, of Lambeth, and of Battersea, to the London Gas Company; parts of St. George-the-Martyr, of Lambeth, of Camberwell, of Bermondsey, and of Newington to the South Metropolitan Gas Company; the parishes of St. Olave, St. John, St. Thomas, Rotherithe, and part of Bermondsey, to the Surrey Consumers' Gas Company.

"4. The City of London Gas Company has surrendered to the Chartered Company 20 miles of street in the City of London, and now only competes with the Great Central Consumers' Company.*

"5. The London Gas Light Company, out of 211 miles of street lighted by it before the districting, has surrendered to six other companies no less than 117 miles; and has entirely withdrawn from competition in the following places—The whole of the Westminster district, and in the parishes of St. James, St. Martin-in-the-Fields; St. George, Hanover Square; St. Clement Danes; St. Paul, Covent Garden; St. Ann, St. Mary-le-Strand, Chelsea, Upper Chelsea, Kensington, Fulham, St. Mary-le-bone, Paddington, St, Pancras, the whole of St. Giles district; St. Andrew, Holborn, and St. George the Martyr; St. George, Southwark; Newington, Christchurch, Lambeth, Battersea, Clement's Inn, New Inn, Lincoln's Inn, Gray's Inn, the Liberty of the Rolls, and the Precincts of the Savoy.

"6. The Equitable Gas Company has retired from competition in 36 miles out of 60 miles of that which it lighted before the districting. The area abandoned is bounded by the Vauxhall Bridge Road, the Bird-Cage Walk, the east side of St, James's Park, Pall Mall, St. James's Street, Regent Street, Charles Street, Tottenham-Court Road, New Oxford Street, Holborn, Castle Street, and a line down to the River Thames near Temple Bar. Throughout the whole of this extensive and populous area, the Equitable Company only retains the lighting of St. Martin's parish, and part of the Strand district.

"7. The Imperial Company has withdrawn from about 42 miles of streets and roads in Fulham and other places south of Hyde Park.

"8. The South Metropolitan Company has retired from about 32 miles of street.

"9. The Commercial Company has retired from the district of Stratford, east of Bow Bridge, and from a district of North Woolwich.*

"The above comprize the principal changes which have taken place under the districting arrangements of the gas companies, and it becomes a serious question, supposing the principle of districting to be admitted, whether the particular arrangement of districts is such as to suit the public convenience.

"In many cases the districts are isolated, and at a great distance from the companies' works. Many parishes are traversed by miles of main for which no gas is supplied, but which merely pass through for the convenience of the company, and for the supply of places lying beyond.

"The divisions of districts are often not conterminous with parochial or district boundaries, and this gives rise to great anomalies and irregularities in the public lighting and the contracts for this service.

"One very important result of the districting is this, that gas of extremely different value is supplied in different parts of the metropolis. This is more particularly the case with the superior quality termed cannel gas.

"The Chartered Company is now supplying cannel gas in the Westminster district of a quality equal to 25 sperm candles, this being the light given by the consumption of 5 feet of gas. In the adjoining parish of St. George, Hanover Square, the London Company is supplying cannel gas, and charging the same price for it as the Chartered Company, but its quality is such that 5 feet of their gas give a light equal to only 18 sperm candles. In another adjoining parish, that of St. James's, Westminster, the quality of the cannel gas is worse still, being only equal to 16 candles. It is evident that, under the districting arrangements, the merest accident of local position may subject a consumer to be supplied with gas 50 per cent. worse in quality than that which his neighbour burns on the opposite side of the street. Such irregularities as these are inevitable from the districting, unless all the companies are restricted to the same standard of quality. The same argument applies to the difference of price which prevails in various parts of the metropolis: this difference of price varying from 4s. to 6s. 4d. per 1000 feet for the same quality of gas.

"Formerly the consumer had, in many parts of the metropolis, not only a choice between the gas of several companies, but he could choose

* The City of London Gas Act, 1859, limits that company to the district it now supplies; and the West Ham Gas Company's Act, 1856, authorized the sale of the "property and business" of the Commercial Gas Company in the West Ham district to the local company.—ED. J. G. L.

whether he would burn superior gas at 6s. or common gas at 4s. 6d. At the present time, however, unless the one company supplying him manufactures both kinds of gas, he has no such choice; and thus, in every way, the consumer is deprived of privileges which he before enjoyed.

"The following are circumstances in which the prices of gas for public lighting have been raised since the districting:—

"In the Westminster district the Chartered Company, which supplies gas for about 800 lamps in this district, raised the price from £3. 17s. 6d. per lamp to £4. 14s., and although they are now lighting this district with cannel gas at £4. 5s. per lamp, they will not agree to furnish any stipulated quantity of gas.

"In St. James's, Westminster, the price of the public lamps has been raised from 63s. to 73s. 6d. per lamp, making an annual difference of 10s. 6d. each on 586 lamps.

"In Chelsea parish the London Company has raised the price of 173 lamps to the extent of 20s. a year each, and in a contract now under discussion with the London Company it is proposed further to raise the price of 860 lamps 10s. a year each.

"In Marylebone the price has been raised 10s. a lamp.*

"In the Holborn district the price per lamp is now 95s., although the London Company formerly offered to light the district for twenty-five years at the rate of £3. 10s. per lamp.

"In Clerkenwell district notice has been given that the price is to be raised from 77s. to 90s. per lamp.

"In Lewisham the price has been raised from 80s. to 90s. for lamps lighted only eight months of the year.

"In Lambeth and other parishes a similar rise in the price has taken place in the public lamps.

"In addition to all these grievances arising from the monopoly of the gas companies, the whole subject of public lighting requires to be placed on a different footing.

"Very few of the contracts contain any proper stipulations, either as to the quantity or quality of the gas to be burnt; and the efforts of certain boards and vestries to burn by meter has been pertinaciously opposed by the gas companies, who, feeling that they have the absolute power in their own hands of enforcing any conditions and any form of contract which they please, will make no concessions of any kind, and thus any vestry and district board in the metropolis is practically at their mercy.

"The delegates have repeatedly made suggestions to the vestries and district boards, with the view of placing the contracts for public lighting on a more equitable basis, but they feel that all efforts to produce this desirable result have a very small chance of success so long as the companies are monopolists, and, while acting without the dread of competition, are not bound by any restrictions.

"The delegates are satisfied, from extensive experiments which have been made under their direction, that the public lamps throughout the metropolis do not consume more than three-fourths of the quantity on which the companies' charges are based; and from an accurate investigation which has been made, they are prepared to show that, at this moment, a sum of £50,000 a year is charged in the metropolis for public lighting in excess of a fair and reasonable price."

THE METROPOLITAN GAS SUPPLY.

WESTMINSTER DISTRICT BOARD OF WORKS.

The Ordinary Monthly Meeting of the Board was held at the Offices, Great Smith Street, on Friday evening, the 13th inst.—Mr. SAMUEL HUGHES in the chair.

The CLERK having read the minutes of the last meeting,

Mr. MALLOCK complained that no record had been made of the protest which he entered against the appointment of the gas committee.

Mr. T. HORN said the minutes ought to be amended in another particular. There was no notice in them of the division upon that motion which he demanded.

A long conversation ensued upon these points, and an appeal was made to the solicitor for his opinion.

Mr. ROGERS said he knew of but one assembly in which the protest of an individual member was received and recorded, and that was the House of Lords. In his opinion, however, the chairman of the last meeting (Mr. Godson) had no power to refuse the division which was demanded on the subject of the appointment of the gas committee. At a subsequent period of the meeting, when it was proposed to vote £90 to that committee, Mr. Rogers gave it as his opinion that the committee had no legal existence, on account of the division upon their appointment having been refused.

Mr. GODSON justified his refusal on the ground, as he alleged, that several members of the board had left the room after the show of hands was taken, and before the division was demanded. On this point there was a diversity of opinion.

Ultimately the minutes were signed by Mr. Hughes and Mr. Godson as being correct, and the board proceeded to business.

The CLERK read the report of the surveyor, recording result of photometrical experiments made by him on the illuminating power of the Chartered Company's gas during the month of November. It stated that the illuminating power of 2½ feet of the cannel gas was equal to 11·62 candles, and of 5 feet of the common coal gas 13·29 candles. He also read a letter from Mr. Beal, honorary secretary to delegates (metropolis gas), requesting payment of balance of conditional contribution of the board towards expenses of the inquiry. It stated that the amount originally promised by the board was £200, of which £110 had been paid, leaving a balance of £90.

The CHAIRMAN said there was a report from the committee on this subject which it would be as well to have read at this stage of the proceedings.

Mr. T. HORN protested against such a course, and contended that there was no committee in existence. In consequence of the very extraordinary conduct of the chairman at the last meeting, the whole of the proceedings in reference to the appointment of a gas committee were null and void. A division was demanded, and refused; the show of hands went for nothing, and any action taken by the gentlemen who were nominated after that refusal was illegal. On this point he appealed to the solicitor.

The CHAIRMAN thought it was unnecessary to ask the solicitor's opinion on the subject.

Mr. ROGERS submitted that as the report of the committee might probably lead to the expenditure of public money, it was important the board should be quite sure that the committee making such report was really and properly appointed. If the report about to be read was from a committee appointed on a show of hands, upon which a division was demanded and not taken, the committee was not a legally appointed one.

The CHAIRMAN contended that the committee was properly appointed. The board was not asked by their report to come to any resolution adverse to the decision of the last meeting.

Mr. ROGERS said the demand for a division got rid of any decision arrived at by a show of hands, just as the demand for a poll at an election or in a vestry on a church-rate question overrode a similar expression of opinion. The 11th bye-law of the board empowered any member to demand a division; and upon its being made, the clerk should immediately take down the names of the members, as it was not in the option of the chairman to refuse or grant a division.

Another long discussion ensued, and resulted in the determination of the board to recognize the existence of the committee, and to hear their report.

The CLERK then read the report, which gave a detailed account of the proceedings of the delegates. Since the rejection by the standing orders committee of their bill for regulating the gas supply of the metropolis, the delegates had taken every necessary step to comply with the forms of Parliament for the introduction of a bill next session, ample notices for which had been given in the *London Gazette*, &c., in which the various gas Acts that would be affected thereby had been duly specified. Mr. Bullar, the eminent parliamentary counsel, who was engaged on the bill last session, had been occupied in making improvements in the same, and also in fixing the maximum price to be inserted—viz., 4s. for common coal gas, and 5s. for cannel gas. The amended bill was expected to be ready by the middle of January. Since July last, the meetings of the managers had been discontinued and the business had been conducted by the great body of gas delegates. Prior to the introduction of the bill last session the delegates had several interviews with the Government upon the subject, and Sir G. C. Lewis had promised to make himself master of the subject before the bill went into committee, but the bill was not read a second time. In consequence of the reluctance of the vestries and district boards to contribute towards the expenses, it was thought necessary again to see the Home Secretary, and to get the Government, if possible, to take up the bill, as was done in the analogous case of the metropolitan water supply. Deputations therefore waited upon Sir G. C. Lewis, and also upon the President of the Board of Trade, to urge the views of the delegates; and the Home Secretary expressed opinions at the interview with him which led the delegates to believe that he took a favourable view of their case. Since then Sir G. C. Lewis had received a deputation from the gas companies, and it appeared the result of that interview was so serious that it was probable Sir George would decline at this stage to adopt the bill of the delegates until there had been a further investigation. In the meantime he had desired, through Sir John Shelley, to be furnished with a statement as to the nature of the demands of the delegates. Although there were considerable doubts as to what course would be taken, it was clear that large expenses would have to be incurred, and from the attitude of the gas companies it was probable that a vigorous effort would be made to thwart the objects sought for by the parishes. The balance in the hands of the delegates in November last was £407. 15s. 7d. It was thought that if this board consented to pay up the amount conditionally promised to the fund, other parishes would be induced to do the same; and thus the large outlay which must be incurred, unless the public were content to have as lame a settlement made in this case as in that of the water supply, would be satisfactorily met. The report concluded with a recommendation that the £90 balance of contribution should be paid to the committee.

Mr. SCUDAMORE inquired whether the delegates had ever given any account of their receipts or expenditure.

The CHAIRMAN replied that on two occasions they had given very detailed accounts.

Mr. GODSON moved, in accordance with the recommendation of the committee—"That the clerk be directed to furnish copies of the contracts for public lighting with this board to the delegates."

Mr. CLARKE seconded the the motion.

The CHAIRMAN said that a great number of contracts had been furnished by other parishes; and it was remarkable to observe what extraordinary provisions had been inserted in such contracts. In some cases the companies refused to contract for any given quantity of light, and scarcely even for the hours of lighting. It was most important to have these contracts according to some uniform system, and containing provisions of some kind for ensuring a measure of equity to the parishes. The supply of copies of the contracts which had been furnished by about twelve or thirteen boards had been already attended with good results.

The motion was then put and carried.

Mr. GODSON moved—"That the solicitor be directed to report on the powers which the Sale of Gas Act confers on the board with reference to testing meters and other matters referred to in the Act."

The CHAIRMAN said he believed the time had nearly expired for parties to avail themselves of the Act, because there were certain town councils and other bodies which had to adopt it by the 13th of February. It was therefore necessary that the board should take same steps to ascertain their powers under it.

The motion was put and carried.

Mr. GODSON moved—"That the finance committee be authorized to draw a cheque for £90, the balance of contribution of this board, to be applied in accordance with the resolution of the board of the 9th of December last.

Mr. EDGAR HORNE inquired whether, if this resolution were adopted, it would be compulsory upon the committee to draw the cheque?

The CHAIRMAN said he did not know that it would be compulsory. He suggested that they should be "requested" to do it.

Mr. AUSTIN, as a member of the finance committee, recommended that the board itself should take the responsibility of signing the cheque. When the £100 was voted for a similar purpose, three members of the finance committee signed the cheque; but no three members could be found to do it again, because they had heard that it was an illegal application of the parish funds.

The CHAIRMAN referred to the bye-laws, and said that the order of the board made it imperative upon the committee to sign the cheque.

Mr. AUSTIN said no bye-law had power to compel him to do that which he believed to be illegal.

Mr. GODSON said the responsibility of the financial committee was a very different thing now to what it was when the former contribution was granted. He, for one, had always objected to "the managers" having anything to do with the appropriation of the moneys voted by the vestries and district boards, because it was evidently wrong that a person living in one parish should expend the money subscribed by another. But he did not feel thus tenderly when the money was to be expended by their own committee; and, as to the legality of the payment, he would undertake to guarantee the committee in reference to this £90. Here was a case in which the board were asked to co-operate with the other parishes in effecting a saving to the metropolis of £50,000 a year, and there could be no question as to their right to do so. Indeed, they had on a former occasion subscribed towards the Vauxhall Bridge Road Act on the same principle.

* No attempt has been made to raise the price of the 3199 lamps in this parish supplied by the Imperial Gas Company, but a few lamps supplied by another company have been raised from the unremunerating price of £3 per lamp to £3. 10s.—ED. J. G. L.

Mr. NORRIS, referring to the resolution of the 9th of December, appointing the committee, said he did not think they had any right to come to the board and ask for money.

The CHAIRMAN said there was, as he understood the matter, a power given to the committee to take certain steps, parliamentary and otherwise, which could not be taken without money.

Mr. NORRIS said it was usual, when bills of this kind were introduced in Parliament, to insert a clause empowering the parishes to contribute towards the expense of passing them; but in this case the committee came and asked for money beforehand.

Mr. SCUDAMORE said he voted for the appointment of this committee, and was aware at the time that they would have to be supplied with the sinews of war, but he was bound to say that the dealings of the delegates up to the present time were such as to raise serious doubts as to the legality of their proceedings. He would therefore like to ask the chairman whether he could give the board any information as to how far the delegates were prepared to proceed in a more regular manner?

The CHAIRMAN said the remarks of the last speaker conveyed a censure upon the delegates, and he should like to hear from him what were the special matters to which he took exception.

Mr. SCUDAMORE was not prepared to go into the whole question now, but his conviction was the delegates had not proceeded in that manner which was best calculated to promote the objects they had in view.

The CHAIRMAN said he should be extremely glad if Mr. Scudamore would join the delegates, as then he would be able to point out in what respects he considered they were wrong.

Mr. T. HORN said that, notwithstanding the positive manner in which Mr. Godson had expressed his opinion on the subject, he believed there could not be a shadow of doubt as to the illegality of such an appropriation of parish money. In this view of the matter he was supported by the opinions of the first lawyers in the land. As to the Vauxhall Bridge Road Bill the case was altogether different. There the ratepayers were perpetually appealing to the parish authorities to take the matter up; but what ratepayers prayed them to interfere on the gas question? Who were the grievance-mongers? There was not one. If the delegates wanted money, why did they not call public meetings to appeal to those who sympathized with their views as to the existence of a grievance, instead of going to the parish boards in order to dip their hands into the rates. Those rates had been collected for a specific object, and it was illegal to appropriate them to any other than a public use. The precedent which would be established if this resolution were passed was a bad one, and there was no knowing where it would end. Next week they might be called upon to subscribe to some other most extraordinary object—and therefore he hoped the board would resist the attempt to raise money in this manner. Moreover, he thought there was a degree of undue haste in coming forward at this time and asking for more money. It was but the other day that this committee was appointed, and now they came demanding a further contribution, after the repeated expression of the board as to its illegality. Was it not a fact also that the Secretary of State was at this very moment in concert with the gas companies endeavouring to find out a method of setting this question at rest? He protested, therefore, against any fresh appropriation of the parish funds, when probably before another meeting of the board the points in dispute might be settled.

Mr. CLARKE doubted very much whether they would be settled; but he was quite sure that if the Home Secretary felt as Mr. Horn did upon the subject, it would never be settled within the next seven years. What was the board now asked to do? To give a cheque for money voted long ago.

Mr. HORN: Conditionally.

Mr. CLARKE: Mr. Horn says it is illegal. No one doubts it; but then we are in this happy position, that most of the other parishes in London have done the same thing.

Mr. ROGERS: That is a frightful admission.

Mr. CLARKE: No, it is no frightful position—I am proud of it.

Mr. ROGERS: It is a frightful admission when you are calling upon the finance committee to sign a cheque.

Mr. TODD inquired whether any of the parishes had paid money since last July.

The CHAIRMAN replied that there were. Within the last few weeks the parish of Chelsea had paid £30, and his own parish £20.

Mr. TODD said he was surprised to find this parish so large a contributor. There were only four others which exceeded it in amount. Many of the parishes, of at least equal magnitude to St. Margaret's and St. John's, had not contributed in anything like the same proportion; and he thought that before this board agreed to subscribe a further sum, other parishes should be called upon to increase their contributions. The original resolution was that the subscription from this board should not exceed £200.

The CHAIRMAN: If you wait for further contributions you will wait a long time.

Mr. TODD said he did not see any reason why this parish should burthen the ratepayers with a larger amount than was subscribed by other parishes of similar extent, and therefore he should vote against the motion.

Mr. GODSON insisted that the whole weight of counsel's opinion as to the illegality of these payments bore upon the expenditure of the money by the managers, and he would not have proposed this further contribution unless the action of the managers had been dispensed with.

The CHAIRMAN reminded the board that this £90 was not voted to the general fund. It was a vote made to their own committee, who no doubt would produce proper vouchers for its expenditure.

Mr. ROGERS wished to set his friend the chairman right when he said there was no risk in voting the money, because their own committee and not the delegates were to expend it. The motion before the board fought shy of the question, "For what purpose was the money to be expended?" It was an illegal purpose, as Mr. Clarke had told them. He (Mr. Rogers) had repeatedly stated such to be his opinion, and the delegates themselves, through Mr. Locke, the member for Southwark, admitted the fact, for they stated to the Home Secretary that the reason why they applied to the Government was, that they could not spend the money of the parishes for this purpose.

The CHAIRMAN: Because "it was said" they could not.

Mr. GODSON thought Mr. Locke's statement was perfectly consistent with what the board were now doing. At the same time, if they could put the burthen on the Government, why should they not do it?

The motion was then put to a show of hands, and carried by 11 to 8.

Mr. TODD demanded a division, which, having been taken, showed the same result.

The CLERK read a letter from Mr. Beal, honorary secretary to the delegates, with a copy of a notice of application to Parliament for an Act to regulate the metropolis gas supply. Also a letter from the same gentleman with draft petitions proposed to be submitted to Parliament by the several vestries and district boards, and requesting that the seal of the board might be affixed thereto.

The petitions were read and approved, and copies were ordered to be prepared to be sealed with the seal of the board at their next meeting.

The CLERK read a letter from Mr. Beal, enclosing a communication from Mr. Perry, of Chelsea, containing the opinion of Mr. Pemberton that it was advisable for the various boards and vestries to take united action by directing their solicitors to appoint a common counsel to represent them in the prosecution of the gas bill in the approaching session of Parliament.

The letter was referred to the committee. The reports made at various meetings of delegates by Mr. Hughes, honorary engineer to delegates, were laid before the board.

The CLERK read a letter from Mr. Lilwall, secretary to the promoters of the Sale of Gas Act, soliciting a contribution towards expenses in obtaining that Act.

The CHAIRMAN said he would propose to the board that a letter be addressed to Mr. Lilwall requesting him to point out in what way the metropolis was benefited by that Act. It appeared to him that the metropolis had been altogether overlooked or studiously excluded from its provisions; and certainly, before this board voted any money towards the expense of obtaining that Act, he should like to know what advantage they were likely to derive from it?

Mr. TODD said he thought it was not necessary to take any notice of the communication, for the board was not in a position to contribute anything. Clearly that would be illegal.

Mr. SCUDAMORE agreed, and thought they had quite enough to do with the gas question without entertaining such a proposition.

It was then resolved that the clerk be directed to write Mr. Lilwall, acknowledging receipt of the communication.

THE GAS AND WATER QUESTION IN MANCHESTER.

A Meeting of the Council of the City of Manchester was held on Wednesday, the 4th instant—the MAYOR (Ivie Mackie, Esq.) in the chair.

THE GAS QUESTION.

Councillor CURTIS, deputy-chairman of the gas committee, in moving the confirmation of the minutes of the committee, said the council were no doubt aware that, in consequence of the extraordinary consumption of gas during the prevalence of the fog at the time of the recent frost, it had been found impossible to supply the demand fully; but the statement that had been made by a person who professed to have obtained the information by visiting the gas-works, that during a portion of the period the town was within ten or twenty minutes of total darkness, so small was the amount of gas in store, was a most gross and deliberate falsehood. The gas in stock on that particular day amounted to 1,800,000 cubic feet. The fact of this statement having been made showed the impolicy of allowing strangers to go through the works, unless they were accompanied by some one able to explain all the details of the management. (Hear, hear.) Supposing it to have been true, which it was not, that the gas in stock at that particular station was so small as had been stated, it should have been explained that the gas in stock was contained in the gasometers at the other station, the quantity in the gasometers at that particular station having been purposely let down low. He mentioned this because it was desirable the public should know that the gas committee were doing all they could to supply every demand. The late gas committee, during the past year, had ordered the putting down of four new gasholders. One of them at No. 5 station was completed, and had been in operation some time; another would be completed during this month; and a third at No. 2 station was completed, and, would be put in operation as soon as the city surveyor certified that the clay in the new pit which had been sunk was properly settled. Lest it should be supposed that all the alterations now in progress were due to the new committee, he begged to say that hitherto they had not carried out any considerable improvement the want of which had not been felt by the late chairman and the late committee; and, but for the fact of a number of cottages which stood on the land on which the new gasholder was erected, which were supposed to belong to the corporation, turning out not to belong to them, the gasholder would have been already in operation, and the committee would have been able to supply the late extraordinary demand better than they did. He mentioned this in order to show that the alterations now in progress had not been adopted in consequence of any new light on the question communicated by Mr. Flintoff. (Laughter.) There was not a single novelty in that gentleman's statements. All that he had said in reference to the desirability of putting down new retorts and effecting other alterations in the works had long been known to the committee and to the manager of the works, and a scheme had been for some time in preparation which, when carried out, would make the gas-works as efficient as they possibly could be. As soon as this scheme was complete, and the proper time for carrying it into effect arrived, it would be laid before the council It was a serious thing to break up a large establishment, to destroy all the existing plant, and obtain new; and it was often more economical to go on working with imperfect appliances until the machinery was nearly worn out than to discard it and purchase new the moment any novelty was introduced. As to the resolution of the committee, which had been so much talked about out of doors, respecting the admission of parties to the works, it would be seen that it referred solely to the members of the gas committee themselves, and not to the other members of the council. The committee felt that it might be regarded as a piece of impertinence if they attempted to dictate to the council. The resolution was to the effect that members of the committee should be at liberty at all times to visit the works when convenient to themselves; but that it be understood that they should not give orders to the workmen or in any way interfere with the works unless specially deputed for that purpose; nor should they take any person not a member of the committee through the works, except by leave of the chairman or deputy-chairman. Therefore any member of the committee was at perfect liberty to visit the works at any time, but not to introduce a stranger without permission. With reference to the members of the council, the committee left it to the council themselves to say whether they should have the privilege of going at any time, or whether they also should obtain permission from the chairman or deputy-chairman of the committee. He might, however, remark that it was undesirable to have many visitors at the works, because they necessarily occupied some portion of the time of the manager, and interfered with the works by distracting the attention of the workmen.

Councillor F. ROBINSON seconded the resolution.

Councillor R. NEILL said the resolution referred to was passed by the gas committee under a feeling of exasperation at a gentleman, whom he did not wish to be hard upon, having taken a person into the works for the avowed purpose of finding fault.

Councillor DYSON: No, no.

Councillor NEILL believed so, at any rate; and he thought they might safely conclude that at all events the individual alluded to went with no friendly feeling towards the committee. He thought it was only fair that

members of the committee who were not themselves practically acquainted with the business of manufacturing gas should be allowed to take with them over the works persons able to criticise and advise; but it was too much to take people for the purpose of finding fault only. He could not see the propriety of the chairman and deputy-chairman having the power of granting or refusing permission to introduce a stranger. If they had not confidence in the individual members of the committee, let them appoint somebody else. (Hear, hear.) He was quite as anxious as any one that the time of the manager should not be taken up in attending upon visitors; but it would be easy to appoint an intelligent workman to perform that duty. They had no secrets in the works; they had nothing they wished to hide; they had not found out anything which the public did not know as well as they; and, therefore, why pass such a resolution? It was going in the face of public opinion, and was very ill-timed, to say the least of it. It had been endeavoured to mix this question up with another, from which it should be kept perfectly distinct. It had transpired that a gentleman had taken information, laid from week to week before the gas committee, to the Gas Consumers' Association; and that was alleged as one reason for passing the resolution. It was to be regretted that any gentleman should avail himself of information which was the private property of the gas committee for the purpose of communicating it to the Gas Consumers' Association. It was only fair and right that the public should know what they were doing, but it was not fair that members of the committee should become spies, and extract matters from their books, keeping back other things, for the purpose of fomenting an agitation out of doors. If the privileges of the committee were abused, he should then be one of the very first to concur in any resolution calculated to prevent it; but he thought it would be very difficult to point out another gentleman who would take either Mr. Flintoff or anybody like him over the works. (Hear, hear.) One offence was not sufficient to justify such a resolution as had been passed; if it was repeated it would be time enough to put a stop to it; and he thought that any one who rendered himself liable to such a charge as Mr. Dyson had done would be justly dealt with if it was recommended that he be withdrawn from the committee altogether. (Hear, hear.) He thought any member of the council should be at liberty to visit the works at any time, and that orders of admission ought not to be necessary. He begged to move as an amendment—"That the minutes of the gas committee be approved, with the exception of the resolution relating to the non-admission of strangers not members of the gas committee, and that the committee be requested to reconsider the whole question, and report to the next meeting of the council."

Councillor WOODWARD seconded the resolution.

Councillor BRITTAIN thought it highly undesirable to throw the works open to any one who might choose to go, at the present period of public excitement respecting gas.

Councillor RUMNEY said Mr. Neill was in error in ascribing the passing of the resolution to a feeling of exasperation. It was a feeling of humiliation, not of exasperation. He felt it to be a very humbling thing that they were obliged to pass such a resolution—he acquiesced in it, though he did not vote—respecting a matter which he had thought might be safely left to the good taste of every member of the committee. But it was admitted that a certain person had been taken through the works, and the member who took him declared that he would take him again, and defied the committee. It was a matter of indifference to him; but he believed no evil would result if all the resolutions on the subject were rescinded, and he should prefer its being done. He apprehended, however, that the power given to the chairman and deputy-chairman to grant orders of admission to the works would be very liberally interpreted, and that no restriction would be placed upon members of the council wishing to introduce a friend, unless under exceptional circumstances. It had been stated that every ratepayer had a right to inspect the works whenever he chose; but the necessity of imposing some restriction must be evident to all. How could the works be carried on if everybody was at liberty to go at any time?

Alderman HEYWOOD said he was disposed to vote for the amendment. It was not because one man did that which was not right, that the privileges of others should be taken away. He did not believe there ever had been or ever would be such a number of visitors at the gas-works as would produce any inconvenience, and did not see any reason why there should not be the utmost freedom in the matter. If the gas committee exercised upon this occasion a wise, discriminating policy, the "exasperated" state of feeling which appeared to exist in the newspapers—and nowhere but in the newspapers, so far as he was aware—would assuredly die away.

Councillor COTTRELL thought the council ought to support the committee in the matter.

Alderman GOADSBY said he never had been at the gas-works, and never felt any desire to go until the committee passed that resolution. But as soon as he heard of that resolution he determined that he would go some day, *nolens volens*. Say that a man should not do a certain thing, and the devil would immediately take hold of him, and he would declare that he would do it. A more inexpedient course than that adopted by the committee at the present time could not have been pursued. It was calculated to create a suspicion that the affairs of the committee were not conducted as they ought to be.

Councillor J. LAMB said it was extremely unfair for any member of the committee to supply information outside, the only object being to lower the gas committee in the eyes of the public, by keeping back that portion which, if told, would expose the fallacies of the other side.

Councillor DYSON asked whether he should be in order in moving the amendment of which he had given notice—"That each member of the city council, when visiting the gas-works, have the privilege of introducing a friend"—after Councillor Neill's amendment was disposed of?

The TOWN-CLERK: Not if Councillor Neill's amendment, referring the subject back to the committee, is carried; yours will be inconsistent with it.

Councillor DYSON said he was sorry if he had wounded the susceptibilities of any member of the council or of the gas committee, but he unhesitatingly avowed that in the exercise of his duty to the persons who sent him to the council he took Mr. Flintoff, an engineer, and a person who, he thought, could enlighten him as to the real state of the works; not, as had been alleged, to find fault, unless there was occasion. He believed it was his duty to do so, and that he should have neglected his duty to those whom he represented, and the interests of the city, if he had not availed himself of every means in his power of finding out what is right and what is wrong. There were only two gentlemen in the council—manufacturing chemists—who, from their education and experience, were qualified to form an opinion as to the management of the gas-works. Therefore, he believed he should have been very wrong if, having an opportunity of receiving the assistance of a gentleman capable of forming a judgment in the matter, he had not availed himself of it. There were probably not ten men in Manchester who really understood the manufacture of gas, and no man should make him swerve from doing his duty, whether it was offensive or not. He was responsible to those who sent him there, not to the committee or the council. How Mr. Curtis could be brought, as on the previous night, to deny that any resolution had been passed excluding any member of the council, he (Mr. Dyson) could not conceive. He blushed for shame when he heard it, to think that a man could turn round so; for it was notorious that when the resolution was first passed it was intended to apply to members of the council as well as to strangers, and the managers of the works were so instructed. With reference to the improvements which it was said were contemplated by the late committee, he begged to say that he had been in the gas committee twelve months, and he had not missed a single meeting, but he never heard of any proposed improvement until after the Gas Consumers' Association was formed. For years past he had been trying to get a certain system adopted, he had been trying to introduce economy in the management; with that view he was constantly asking questions of the committee, until he was pitchforked on to the committee, because he was troublesome to the council. The present system was unjust alike to the ratepayers and to the servants. In the first place they left the management practically in the hands of one man, the chairman of the committee; and in the second place they put temptation in the way of their servants, by paying them inadequately. There was not one of their principal servants who might not double or treble his salary by defrauding them; and if he could get a dishonest member of the committee to assist him the fraud could never be discovered. In Liverpool the principal manager had £1500 a year, and the second manager £500; while here they paid a paltry £200 or £300 a year to as able and clever men as any in the kingdom. If there was perfect openness and competent supervision there would be no fear of fraud, and no suspicion of jobbery. What he had done he had done from a sense of duty, and not from any desire to act offensively to the committee.

Councillor KING supported the original resolution.

Councillor ROBINSON asked whether there was any substantial objection on the part of the gas committee to adopt the amendment of Mr. Councillor Neill. If, after the expression of opinion on the part of the council which had taken place, the matter were referred back to the committee, he thought a resolution might be framed which would meet with the unanimous approval of the council.

Alderman NEILD said he had heard this discussion with very great pain. It appeared to him that their valuable works, which had existed for thirty-six years, without very great care, were on the point of being wrecked. (No, no.) He said it advisedly. Such a partner as Mr. Dyson would wreck any concern in England. He would not have him as a partner at any price; but would sacrifice a share in the best concern in England rather than have such a partner. He called upon the council to support the committee. Let the committee manage their own affairs. If the present course of proceeding was to go on, he told them again, most advisedly, that this valuable establishment would be wrecked; because no men of business, no men of standing, no men of position, who were fit to be entrusted with such an affair, would submit to the annoyance. He for one would not. Whatever might be deemed his duty as a member of the council, he would not be "werrited" in the style in which the gas committee were being werrited now. He asked the council to support the committee until they had finished their work; then would be the time to find fault with them, if they had not done it satisfactorily. If they continued interfering with the committee day by day, this valuable property would be wrecked.

Alderman BENNETT thought that Councillor Dyson, not being himself acquainted with gas-works, had a perfect right to avail himself of the assistance of either Mr. Flintoff or any other gas engineer he might think proper to take into the works. As a member of the council, he had a right to inspect the books of the committee for the purpose of obtaining any information, and he had an equal right to visit the works for the same object. This was the first time an attempt had been made to invade the privileges of members of the council, and he looked with great jealousy upon it. Not at any time, and especially now there was so much agitation on the subject, could the committee have done a more unadvisable or impolitic thing than to pass the resolution they had done.

Alderman CLARK said he could not but regret that the council should spend their time in discussing privileges which had no existence except in the imaginative brains of certain members of the council. No member of the council had any privilege, as such, except when attending a council meeting in that room, or upon a committee appointed by the council; and if gentlemen would take the trouble to inform themselves on the question they would find that such was the case, and that all their supposed privileges were without foundation. (No, no.)

The TOWN-CLERK: It is so.

Alderman CLARK continued. He had never dreamt that he had any prescriptive right to visit either the gas-works or the water-works without permission, and he was sure he had no legal right. He thought the gas committee had brought this discussion upon themselves by not adopting the straightforward course, which was to come to the council with a resolution that Mr. Dyson be removed from the committee—("No, no," and "Yes")—for he had seldom heard anything that reflected less credit upon a member of the council than Mr. Dyson had afforded by his own statement; and he could only say that if he had been inclined to place any confidence at all in Mr. Flintoff, it would have been entirely dissipated by the fact that he would condescend to visit the gas-works in such a manner. He was quite sure that a man of gentlemanly feeling would not have done so; and when Mr. Flintoff chose to accuse the council and the gas committee of gross ignorance, he (Alderman Clark) felt inclined to ask whether he was the same Mr. Flintoff respecting whom Mr. Barlow, a gas engineer of great celebrity and standing in London, had given an opinion, which would certainly render the opinion of Mr. Flintoff valueless? He had no objection to the question being reconsidered; but he trusted that no member of the council would claim for himself privileges that he would deny to any ratepayer. As to the ratepayers having a right to inspect the works because they were proprietors, he apprehended that proprietors of the London and North-Western and Lancashire and Yorkshire Railways would find themselves grievously mistaken if they fancied they could, at any time, inspect the works of those companies, simply because they were shareholders.

Councillor ROYLE altogether dissented from the views of Alderman Clark in regard to the rights of members of the council. He considered it a mistake on the part of Mr. Dyson to take Mr. Flintoff over the works, that gentleman having taken such a prominent part in the agitation on the subject; but he thought it beneath the dignity of the committee to pass the resolution they had done.

Alderman SIMPSON, chairman of the gas committee, begged the council to believe that anything like unnecessary exclusiveness was altogether foreign to his feelings. But the council had imposed upon the gas committee the responsibility of developing, to the utmost of their power, the resources of the gas-

works, and to make the establishment commercially successful. They had no object but this. He asked any gentleman familiar with the conduct of large works whether it would be possible to make proper and economical arrangements for the performance of all the duties within those works if the attention of the principal was liable to perpetual distraction by having to show strangers over the works? It was true an officer might be appointed specially for that purpose, but that would be a wasteful and unnecessary expense. A rigid system of exclusion was adopted in gas-works generally. He had tried to obtain admission into the gas-works of fifty or sixty towns in England, but had succeeded only in London and in Glasgow. They had nothing to hide, nor any private interests to serve; the only benefit they hoped to gain was the good opinion of the council and the city at large for the good management and consequent commercial success of the works, and they had no wish unnecessarily to exclude any one. He believed Alderman Clarke's statement respecting the supposed privileges of the council was correct, but the committee had no wish to insist upon it; all they wished to do was to discharge the duties the council had imposed upon them in the most satisfactory manner. It had been stated that the reign of Alderman Shuttleworth was to be continued by himself and Mr. Curtis, that there was to be a continuance of the same policy. He could only say that Alderman Shuttleworth's policy deserved well of Manchester; it deserved the respect of every member of the council, and of the people out of doors; and as long as he had a voice in the council, and was able to raise it, he would never hear that policy traduced, because he was satisfied that if gentlemen would carefully look at the figures, would look at the condition of the works when Alderman Shuttleworth was first connected with them, would look at the time and labour he had devoted to them for twenty-five years, would look at the results to Manchester—even in comparison with Liverpool, of which so much was said—and at the prices paid, those figures would be Alderman Shuttleworth's vindication; and it would require no remarks from him or any one else upon those figures to establish what he had said. Upon those figures Alderman Shuttleworth might safely take his stand, and might appeal to them, and to them alone. If the deputy-chairman would consent, he (Alderman Simpson) had no objection to the resolution being referred back to the committee. There was no indisposition to reconsider the matter, but he begged the council to remember the circumstances under which the resolution was passed. Mr. Dyson had taken through the works a person avowedly hostile to the gas committee, and, being unable to explain the arrangements of the works, that very night this person made false statements respecting the works, and fell into errors which, if he had had a proper person to conduct him, he could not possibly have fallen into. But to avoid the recurrence of such mistakes, and to prevent people from going away with wrong impressions, which would create dissatisfaction and difficulty, and require explanation in that chamber, the constant attendance of somebody would be necessary if visitors were admitted without restriction. Still the resolution would not have been passed had not Mr. Dyson persisted in saying, when appealed to, that unless it was passed, he should take Mr. Flintoff again the next day. In the face of that declaration, and knowing the object of the threatened visit, what other course could the committee take? There was no other possible means by which they could restrain a man bent upon doing all the injury he possibly could. In saying this, he judged of him by the statements he had made, and by his printed character. (Dyson or Flintoff?) He meant Flintoff. That gentleman's only object being to stir up strife and discord, it was evident he was not a proper person to be taken through the works. He (Alderman Simpson) was told Mr. Flintoff had received a retainer for the express purpose of doing all he could to abuse the gas committee, and that he was paid £5 a day or £5 a lecture. That he was paid was undoubted, and his lectures only acquired special interest in the degree in which they especially attacked the gas committee. Was it possible for the servants of the gas committee efficiently to discharge their duty if their attention was to be perpetually distracted by such proceedings as Mr. Dyson's? Mr. Dyson said he was put upon the committee because he was troublesome to the council. He (Alderman Simpson) must say he was very troublesome to the committee, and they would only be too happy to make a present of him back again to the council—(laughter)—but it would have been an offensive course to adopt, and he, for one, was desirous of acting in harmony with any one whom the council might choose to appoint as his colleague. But it was not possible to act with people who would listen to no remonstrance, and who would be governed by no reason. They had found that in reference to this question it was totally useless to appeal to his good feeling, to act upon his sense of delicacy, or to awaken in him any respect for the commercial prosperity of the establishment; to attempt to do anything of the sort was as useless as talking to the wind. (Laughter.) The committee had tried to adopt the mildest and the least offensive course towards him, and he hoped that after this discussion the matter would be allowed to drop. He trusted the observations that had been made would be sufficient to operate as a complete restriction to Mr. Dyson, and that he would not conduct himself so exceptionably as he had done.

The original resolution was then withdrawn, and the amendment was passed as the substantive motion.

Report of the Gas Committee.

The following report of the gas committee was received, and ordered to be entered on the minutes:—

At a meeting of your committee on the 16th day of December instant, the following resolution, adopted by the water-works committee on the 8th instant, was submitted:—

"That in order to enable this committee to prepare their estimates, and to determine the rates which it will be necessary to recommend the council to make for the ensuing year, the gas committee be respectfully requested, as early as may be practicable, to give such information as they may be able as to the amount of gas profits which the committee may fairly assume will be paid to the credit of the department."

In order to enable your committee to afford the information desired, and to estimate the amount of the surplus revenue which will be payable to the improvement and water-works committees for the year 1859-60, it was necessary to determine what sums should be charged upon the gross profit in respect of depreciation of the works and liquidation of the mortgage debt.

Your committee have received the following report from the town-clerk as to the liabilities in this respect imposed upon the corporation by the several Acts of Parliament under which the present mortgage debt has been created.

In the report of Mr. Peacock, which is referred to by the town-clerk, the various clauses relating to this subject, and which were specially referred to at the last meeting of the council, were set forth.

The town-clerk presents the following report:—

"*Gas Debt.*

"Since the meeting of the council the town-clerk has, for the first time, seen the report presented to the Gas Committee by Mr. Peacock, which bears date the 8th of June, 1859.

"The clauses in the several Acts under which the mortgage debt has been created, including those which impose the obligation to create a sinking-fund for the liquidation of such debt are generally correctly stated.

"It is, however, necessary and important that the town-clerk should direct the attention of the committee specially to the effect of clauses in the 8th and 9th Vic. cap. 141.

"By the 7th and 8th Vic., cap 41, the council are, no doubt, required to set aside annually 1-20th of the amount owing in respect of the first and second charges of £100,000 and £150,000 respectively, thereby authorized to be borrowed.

"At the time such Act was passed it was not the practice of the council to borrow for fixed and certain periods, but by the 8th and 9th Vic., cap. 141, power to do so was obtained; and it is by the 71st clause provided, that if the counsel shall in any mortgages fix a time for repayment of the principal, 'then, and in every such case, it shall be lawful for the council, *instead of* appropriating annually *the whole or any part* of the sinking-funds by the 7th and 8th Vic., cap. 41, directed to be formed for paying off the said sums of £100,000 and £150,000 respectively, to set aside and retain *such sums annually as the council shall think proper* for the purpose of forming a fund to pay off the sums secured by such mortgages at the time appointed for the payment thereof."

The 73rd clause of the same Act gives power to the council to borrow the money required, in case the sums so set aside shall be insufficient for the purpose of paying off any of such mortgages at the time fixed.

"If the town-clerk is not mistaken, the whole of the moneys now owing as part of such first and second charges, are repayable at periods fixed in the mortgages; and in that case it appears that the obligations created by the 7th and 8th Vic., cap. 41, to appropriate 1-20th part as a sinking-fund does not, so far as such portion of the debt is concerned, now exist; but that it is left to the council to set aside and retain such sums annually *as the council shall think fit*, for the purpose stated in the clause below referred to.

"The portion of the gas debt to which the discretionary power so given will apply, appears to amount, according to Mr. Peacock's statement, to the sum of £159,827. 18s. 4d.; and, so far as that amount is concerned, the clauses in 7th and 8th Vic., cap. 41, which were read at the recent meeting of the council, do not, as it appears to the town-clerk, apply.

"By reference to the accounts for the past year, it appears that the whole mortgage debt, including the last-mentioned sum, is £300,570, 8s. 4d.; and that the committee have set aside as a sinking-fund £7500, and have also paid to capital account for depreciation £5000, making, as it would appear to the town-clerk, the sum of £12,500 applicable, in fact, to the liquidation of the mortgage debt.

"If the town-clerk understands the object of the depreciation-fund, it is for the purpose of providing money to meet the considerable outlay which will from time to time be necessary in the renewal of the more expensive portions of the plant.

"If the amount so set aside be annually applied in reduction of the debt, a saving of interest will arise, and the amount necessary whenever and as required for the purposes suggested can be most conveniently obtained by the exercise to that extent of the borrowing powers of the corporation.

"So far, then, as relates to the gas debt, it appears to the town-clerk that even supposing the committee do not consider the £5000 depreciation as in effect liquidation (although the town-clerk cannot understand why there should be any difference in their application), the committee have, by the appropriation even of the £7500, complied with the *literal* obligation of the clauses relating to the formation of a sinking-fund; whilst, on the other hand, if the £5000 for depreciation paid from revenue be, like the £7500, applicable for repayment of the debt, and therefore to be considered as liquidation, it is clear that the committee have not complied with the letter but with the spirit of the clauses relating to this subject.

"*Improvement Debt.*

"So far as the portion of the debt created for improvement purposes, and which the town-clerk will call the improvement-debt, is concerned, the town-clerk respectfully submits that all obligations in relation thereto belong to, and must, under the directions of the council, be fulfilled, not by the gas committee, but by the improvement committee, out of and by means of the funds paid over to them for improvement purposes. This portion of debt has not been created for gas purposes, but at the instigation and for the purposes of the improvement committee; and it is for that committee, under the direction of the council, to carry out all obligations in relation thereto which the several Acts may have imposed.

"The money was authorized in the first instance to be borrowed, as the Act recites, 'for the purpose of completing without delay the improvements;' or, as stated in the report presented to and approved by the council, 'for the purpose of enabling the council to carry out simultaneously and without delay, and thus at a reduced cost, the various improvements, for making which powers were sought by the Act.'

"The council authorized, in fact, the mortgage of the coming gas profits to raise money to enable them to carry out more advantageously large improvements; and upon the understanding that the debt so created would be repaid out of the improvement-funds as rapidly as might be practicable, and not with any intention of delaying its payment for a lengthened period.

"A reference to the clauses in the 'Manchester New Streets Act, 1853,' will confirm the opinion now given. Application was being then made for power to borrow money only for improvement purposes, and by reference to section 33 it will be seen that the council are required to set aside the sinking-fund 'out of the money for the time being applicable for the purpose of defraying the expense of improvements,' or, in other words, out of the gas profits.

"Subject to the explanation before given as to the moneys borrowed either for gas or improvement purposes, as part of the £100,000 and £150,000, the obligation to set aside a sinking-fund no doubt exists, and must be, and as the town-clerk believes is and has been, carried out by the improvement committee; but with the debt created for improvement purposes, it does appear that the gas committee—as the managers of the trading concern—have really nothing to do. Whatever the words of the Act may be (and it is necessary to bear in mind that Parliament can only deal with the corporation, and knows nothing of the several committees to which the carrying out of any powers given may be entrusted), there is no doubt that it was really out of the funds payable by the gas committee for improvement purposes, or in other words the profits of trade left after deducting all charges properly belonging to and created for the benefit of the gas establishment, and which profits are declared to be applicable for improvement purposes, that the improvement debt was to be liquidated, and it was and is the improvement committee who are bound out of such moneys to discharge liabilities in respect thereof.

"*Town-hall, Dec.* 12, 1859." "JOSEPH HERON, Town-Clerk.

In accordance with the recommendation of the audit sub-committee, to whom the subject was referred for consideration, your committee resolved that, inasmuch as the town-clerk is of opinion that, by setting aside the sums heretofore directed out of revenue in respect of depreciation of the works and liquidation of the mortgage debt, the provisions of the Acts of Parliament relating to the gas-works, and the debt charged thereon, have, so far as the committee are concerned, been carried out, the sum of £5000 for depreciation of the works, and the further sum of £13,000 to be applied towards liquidation of the mortgage debt, should be included in the estimate of revenue for the current year, such sums being together equivalent to one-twentieth part of the mortgage debt now owing, and being the amount required by the provisions of the Acts referred to, to be annually set aside as a sinking-fund for the repayment of the mortgage debt.

An estimate of the probable amount of surplus profits for the year 1859, prepared by and under the directions of the audit sub-committee, having been submitted and considered, your committee ordered that the water-works committee should be informed that your committee estimate the amount of surplus profits for the year 1859-60, which, under the resolution of the council, will be payable to the improvement and water-works departments, at the sum of £25,000.—On behalf of the committee, JOSEPH SIMPSON, Chairman.

Town-hall, Dec. 30, 1859.

THE WATER-WORKS.

Alderman CLARK moved—"That it be an instruction to the water-works committee to charge, in future, all expenses connected with the repairs and reconstruction of any portion of the water-works to revenue account." Some time since, he called the attention of the council to the apparently interminable addition of the capital account of the water-works; and he was astonished to find that resolutions had been passed by the water-works committee, that the expenses connected with certain repairs should be debited to capital account. The gross cost of the water-works was already sufficient, without unnecessarily or illegally adding to the enormous debt; and if the council sanctioned the expenditure of capital for reconstruction and repair, he had no doubt but that such a resolution would be cancelled by the Queen's Bench. He had no desire to increase the rates; but if such a

course as he had described were pursued, the time would come when the rates they were now paying would be hardly sufficient to pay the interest of the debt. They were charging to capital account the repairs of reservoirs which they had used for some years. They could hardly expect, even if they had been more successful in their reservoirs, that leakages and other accidents would not occur, which would require no small sum to make them good. It was, therefore, not only an illegal, but it was not a creditable application of the sinking-fund (which, by the Act of Parliament, they were required to set aside in liquidation of the debt), that it should be, either in part or whole, appropriated to pay for repairs. A sinking-fund that was not strictly applied to the purposes for which Parliament sanctioned it (and Parliament insisted that 1 per cent. should be set aside for the sinking-fund to redeem a portion of the debt), but was used to pay for the repair of reservoirs and other purposes, was an absolute fraud upon the Act of Parliament; and in sanctioning such a course the council would be pursuing a line of conduct that would bring discredit on any private establishment. To himself it was a matter of indifference what view the council took of the matter, but he thought they ought to be just before they were generous; at all events, he would absolve himself from being a party to sanction an interminable addition to the capital account. The repairs ought to be strictly paid out of the revenue account; for if the plan of paying them out of the capital account was adopted by any private company, bankruptcy must be the inevitable result.

Councillor J. GRAVE seconded the resolution.

Councillor PENNY having moved an amendment,

Alderman BENNETT denied that what the water-works committee were at present paying for out of the capital account could be properly called either repairs or reconstruction. Therefore, the water-works committee might vote for the resolution of Alderman Clark, and still adopt the course to which he objected. That there might be something definite before the council, he would suggest to Mr. Penny to withdraw his amendment, allowing this to be substituted:—"That, as the expenditure being incurred at the large reservoirs on the Etherow is for the purpose, not of repairing or reconstructing, but, in fact, of completing such works, such expenditure is, in the opinion of this council, properly paid out of capital, instead of being charged to revenue." The council would have to say whether the water-works committee should spend £4000 or £5000 a year out of capital account, or whether all charges for completing the reservoirs should come out of the revenue account. If the reservoirs had been completed, they must have been able to hold a certain quantity of water, which the original estimate contemplated they should hold; and supposing the Woodhead reservoir would not hold that quantity, the money spent to make it hold that quantity could not, in the eyes of any man of common sense, be charged to revenue. He hoped the efforts of the water-works committee would not be crippled.

Councillor PETER ROYLE seconded this amendment.

After considerable discussion, Councillor Penny having withdrawn his amendment, Alderman Bennett's was put to the council as an addition to the motion, when 26 voted for and 17 against it.

The amendment was therefore carried, and became an instruction to the committee.

The council adjourned at half past two o'clock, leaving a notice of motion by Councillor Dyson—"That the price of gas be at once reduced to 3s. 9d. per 1000 cubic feet"—undisposed of.

PRUSSIAN REGULATIONS FOR TESTING GAS-METERS.

The testing of gas-meters has for some years past been regulated in Prussia by the Government, and we subjoin a translation from the *Journal de l'Eclairage au Gaz* of those regulations, not so much for their intrinsic value at the present time, as a record of what has been done on this subject in foreign countries.

"*Ministerial Decree respecting the Stamping of Gas-Meters.*

"According to the terms of the decree of the 13th of May, 1840 (which orders that in all cases, when anything is sold by weight or by measure, no sale shall take place in Prussia until the weights and measures be legally stamped), the supply of gas for lighting should naturally be placed under the same conditions, since it is sold to individuals by measure, and they pay for it according to the quantity they consume.

"Therefore, to prevent the infringement of the before-mentioned decree, gas for lighting, if supplied by measure, can only be sold by the cubic foot; and for measuring the quantity, meters that are legally tested and stamped must be employed.

"Those meters only will be permitted to be tested and stamped which are constructed on the principle of a rotating-drum partly immersed in water, or in any other similar liquid, and which fulfil all the conditions prescribed in the instructions given to the agents who are appointed to test them.

"Every meter must have inscribed on a badge or plate the number of burners it is calculated to supply, the name and the residence of the manufacturer, and also its own number in the order of manufacture.

"The capacity of the drum of the meter which serves to measure the gas must be calculated in Prussian cubic feet, and those meters only shall be stamped which have their capacities thus expressed.

"Nevertheless, the meters that are not constructed according to the foregoing measures may be tested, provided they are presented to the officers before the 1st of January, 1855, after which date they can be no longer admitted.

"The testing and stamping of the meters must be done in the provinces by a commission, or at Berlin at the testing-office, by a person appointed by the authorities.

"There shall be paid for testing a measuring-drum of—

¼th of a cubic foot	0	thaler	15	silver groschens.*	
½ " "	0	"	22	"	"
¾ " "	1	"	00	"	"
1 cubic foot.....	1	"	10	"	"
1½ cubic feet	1	"	20	"	"
2 "	2	"	00	"	"
3 "	2	"	10	"	"
4 "	2	"	20	"	"

"If five meters of the same size are brought at the same time to be stamped, the charge shall be diminished one-third.

"For the re-examination of meters that have been previously tested, or which were found defective at a previous trial, only one-half of the above charges shall be made.

"In addition to the cost of testing, there must be paid to the director of the commission, or to the offices of this administration, for the minor charges of stamping and testing, the following fixed prices, which shall not be exceeded:—

For 1 drum of ¼th of a cubic foot	0	thaler	10	silver groschens.	
" " ½ " "	0	"	12½	"	"
" " ¾ " "	0	"	15	"	"
" " 1 cubic foot.....	0	"	17½	"	"
" " 1½ cubic feet.....	0	"	20	"	"
" " 2 "	0	"	25	"	"
" " 3 "	1	"	00	"	"
" " 4 "	1	"	05	"	"

"For the due execution of this decree, the royal administration will give the necessary directions to the testing commissioners, if there be any gas-works for public lighting within their jurisdiction, so that they may make known to the public, in the journals or other public papers, the decree which we have prescribed.

"The providing of the necessary apparatus for testing the meters, as well as of that mentioned in the instructions given to the testing commissioners, shall be undertaken by the royal administration, and the cost of them shall be defrayed from the first fees received; and in case that sum should not be enough, the deficiency shall be liquidated on the presentation of an extract from the accounts of the commission.

(Signed) "VON DER HEYDT,
"The Minister of Commerce and Manufactures.

"*Berlin, July* 10, 1853.

"*Instructions to the Agents appointed to Test the Meters.*

"To provide for the execution of the decree of the 10th of July, 1853, relative to the trial and stamping of gas-meters, the following instructions are given to the authorities charged with the testing of them:—

"1. No meters shall be stamped but those constructed on the principle of a rotating-drum made of plate tin partly immersed in water, or in some analagous liquid. These meters should be furnished with accessory apparatus, indicated by the subsequent articles 2 and 4.

"2. The essential part of the meter is the drum, turning on an horizontal axis, which should be completely enclosed within a tin case, hermetrically soldered, to serve, at the same time, to contain water and gas. A great portion of the drum should be immersed in the water, which should enter through openings at the sides, and fill it to the level of the water on the outside. The capacity of the drum which serves to measure the gas should be painted in oil colour or varnish on the cover, and the figures of the index, placed at the back of a glazed opening, should be perfectly visible. If the drum be made according to the direction of article 3 of the decree of the 10th July, 1853, which will not become obligatory until after the 1st of January, 1855, the measurement will be expressed fractionally; for example, ¼ of a cubic foot or ½ cubic foot, &c. If the drum be not so constructed, the measurement will be marked by decimals; for example, 0·243 cubic foot or 1·46. In the latter case the authorities charged with the testing must themselves inscribe the cubical capacity, if it has not been previously done, without any additional charge.

"3. The dial of the meter is undoubtedly the most important part of the apparatus. The hands are put in action by the rotation of the drum, and serve to register by the number of revolutions of the drum the quantity of gas which has passed in a given space of time, and the number of cubic feet supplied is thus regularly counted. During the revolution of the drum the figures of the dial pass from hundreds to thousands up to 100,000, and consequently indicate hundreds of cubic feet. To check a smaller number of cubic feet than 100 a plate or cylinder, turning horizontally, is placed on the right hand, above the last figures, where it must be seen. In meters for three lights the circumference of this plate or cylinder is divided into five; in those of larger size it is divided into ten equal parts, so that by means of a hand arranged for that purpose fractions of hundreds of cubic feet may be counted.

"4. The dial should be firmly fixed in the case of the drum. It should be covered with glass, so that the figures may be seen whilst the dial is protected from being fraudulently altered. When the meters are taken to be tested the dials should not be fixed, neither should the bands which connect them be attached, in order that they may be removed during the testing and the figures be exactly regulated and the working of the hands verified.

"5. The measurement must be given in Prussian cubic feet under the pressure of an inch and a half of water. A difference of 2 per cent. in the measurement may be tolerated.

"6. The measurement of the drum should be taken by means of atmospheric air. For this purpose a quantity of air that has been accurately measured is passed through the drum, and the figures on the dial must be examined to see if they agree exactly with the quantity of air introduced.

"7. In the above mode of measurement a cubical measuring apparatus must be employed, the drawing and description of which are appended. To render this apparatus fit for testing, the bell which serves as a reservoir for the air is raised sufficiently above the water that the point of zero may be exactly opposite the hand; and, the stop-cock being closed, the pressure of the air is regulated by increasing or diminishing the counterpoise so that the pressure-gauge indicates an inch and a half column of water.

"8. At the same time, the meter under trial (the dial being set at zero and the tin cover removed) is fixed upon a horizontal table where it is placed in communication, by means of an indiarubber tube, with the air apparatus above described. The meter should be then carefully filled with water, by a tube provided for the purpose, until the fluid begins to flow through the opening below the water chamber, which is a sign that the level of the water within the meter is correct. When the water ceases to flow, the opening at the top is first closed, and afterwards the overflow, and a tube must be fitted into the outlet in the upper part of the case, to which it should be hermetrically sealed. When everything is thus prepared, the stop-cock of the air tube must be opened, until 20 cubic feet of air have passed from the bell of the apparatus into the meter, when the stop-cock must be again closed.

"9. If the meter be of the smallest size intended, viz. for three lights, this single experiment will be sufficient. It may be completed in less than a quarter of an hour, and when ended the hands of the dial should correspond with the direct measurement, and the difference should not exceed two and a half per cent in a cubic foot. When meters of larger size are tested, this experiment must be repeated several times, according to the capacity of the drum, and each time the bell must be raised so that the point zero of its scale may be opposite the hand of the dial. Five-light meters require at least two experiments, each of which takes only half the time mentioned above. Meters for ten lights must be tested in the same manner. They require four experiments, in which 80 cubic feet of air should pass through the drum.*

"The experiment should be repeated five times, so that at least 100 cubic feet of air may pass during the testing, because in this manner correctness is more readily and more exactly obtained. That number of experiments

* The thaler is equivalent to about 3s. sterling, and the silver groschen to 1 1/6d.

* If there be room to fix a bell six feet high, a scale of five feet will give 25 cubic feet, and thus in four experiments 100 cubic feet will have passed through the drum.

will be also sufficient for meters for more than ten lights: they will require about half an hour. Nevertheless it is desirable, and in doubtful cases it is necessary, to allow more than the 100 cubic feet of air to pass through the meter during the five experiments, so as to be certain that the difference of 2 per cent of measured air allowed by article 5 is not exceeded.

"10. The time occupied in the experiments is so regulated that the drum in its effective working to produce a steady flame should make from 100 to 120 revolutions in an hour; to diminish the time of the testing the discharge-tube should be opened, so that the revolutions may be as many as from 150 to 160 per hour.

"11. To expedite the operation of testing, several meters, not exceeding five, of the same capacity, may be tested together. The air used in the first trial of the first meter should pass through the second, and so on through all the meters that are tested together. For this purpose the meters should be placed according to article 8, in a line on a horizontal table close to one another, and after they have been all filled with water to the proper height, the apparatus for cubical measurement should be connected with the inlet-pipe of the first meter, and that should be connected in the same manner with the second by means of an indiarubber tube, and so on to the third and to every other meter in connexion; the upper opening of the last one being furnished with a discharge-pipe. As by this arrangement the air passes through each meter with a diminishing pressure, the drum of the last one will make several more turns to pass the same quantity of air, but the difference is so small that it need not be taken into consideration; it will not, indeed, be more, even when the pressure in the first and the last meter differs as much as an inch of water, than $2\frac{8}{9}$ in a 1000, or $\frac{1}{4}$ per cent., which does not amount to an eighth part of the difference allowed by article 5.

"12. If, after these trials, there appears to be a difference in the capacity of the meter exceeding the limits authorized by article 5, the meter must not be stamped, and one half of the fees for testing as stated in article 6 of the decree of the 10th of July, must be returned to the owner. Nevertheless, if by the trials that have been made the capacity of the drum has been exactly ascertained, in that case the size as indicated on the case must be effaced by the testing officers and replaced by the correct figures; and if the meter has not previously had its estimated size marked upon it, according to the 2nd article, it shall be inscribed by the authorities.

"13. In case the experiments show that there is no difference, or a difference less than that sanctioned by article 5, or when the exact capacity of the meter has been inscribed on it by the testing officers, then the stamping shall take place in the following manner:—

"In the first place, the index-box before mentioned shall be placed upon the meter and soldered by the testing officers in three places on its lower edge, so that it may be completely soldered on its return to the workshop; and, in order that the exactness of the figures may be checked, the test-stamp is impressed on one of these three solderings, which must be made with a sufficiency of metal. Furthermore, the tin case of the water-box must be stamped in two places; in one place with the royal eagle, and in the other with the private mark of the commission, and this part shall be soldered completely all round the outer edge. Lastly, the back part of the cover of the drum must be also marked on the edge by drops of solder, which shall be stamped with the royal eagle. The stamping should be done in such manner that half of the impression may be on one part and half on the other part of two connected pieces, so that they cannot be separated without injuring the stamp.

"14. With every meter that is stamped there shall be given to the owner a declaration of testing, for each meter separately, which declaration shall serve also for a receipt, according to a given form.

"*Berlin, 10th July*, 1853."

SETTLEMENT OF THE GREAT TORBANEHILL CASE.

We have been favoured with the following particulars connected with the well-known case, the "Bathgate or Boghead Gas Coal *alias* the Torbanehill Mineral," which has lasted upwards of seven years, having passed through several phases in the Supreme Law Courts of Scotland and England.

A compromise was finally come to on Wednesday last, the 11th current. It is embodied in a minute of agreement between Mr. and Mrs. Gillespie of Torbanehill, of the first part, and Messrs. James Russel and Son, and James Russel, Esq., of Blackbraes, of the second part.

The preamble of the minute of agreement, which itself consists of twelve articles, is as follows:—

"The said parties considering that disputes and differences have arisen between them, and a lengthened litigation has taken place, with respect to the missives of agreement for a lease of certain minerals in the lands of Torbanehill, entered into betwixt the said first party hereto on the one part, and the said company of James Russel and Son, and individual partners thereof, on the other part, and dated the 30th of March and 1st of April, 1850; and both parties being now desirous that the said litigation should be brought to an end, and all disputes and differences between them amicably adjusted and settled, they have agreed and hereby mutually agree and bind themselves as follows:"—

The first two articles provide that the actions at present depending shall be abandoned, as a consequence of the execution of the minute.

The 3rd article provides that each party pay their own expenses.

The 4th article, which has for title "Name of Mineral," is both an important and curious one—important in a scientific point of view, and curious as illustrative of the pertinacity with which either party have clung to their own views. The article is as follows:—"Whereas the second party have been, and are working in the said lands of Torbanehill, and disposing of, under the name of Bathgate or Boghead gas, parrot, or cannel coal, a mineral which they, the second party, deemed and deem to be a parrot or cannel coal, and which the first party deemed and deem to be a new mineral substance, having an argillaceous base, and to be of so peculiar a nature as to constitute it in truth a new and very peculiar variety of bituminous schist, slate, or clay, and have been for sometime in use to call 'the Torbanehill Mineral;' it is hereby agreed that, throughout the remainder of these presents, where the mineral in question is named, it shall be called for the sake of brevity the disputed mineral."

Article 5 relates to the subject of a portion of Torbanehill which was reserved from the operation of the mineral lease, and by this article "the disputed mineral," as we now call it, contained in the reserved portion of the estate, may be worked or let by the proprietors, without the danger of any obstruction being offered by the second party in the agreement.

Article 6 is occupied with the subject of a "north-west barrier." This article provides that the first party shall give up to the second party "the whole of the disputed mineral which may be found in the barrier along the north march of Torbanehill lands, between Torbanehill and Torbane; or, in other words, where the lands of Torbanehill and those of Torbane join and meet." Certain conditions are adjoined, such as the payment of a specified lordship.

The next article, which is the 7th, is titled "Tollage for the use of railways," and fixes the tollage to be demanded for the passage, over the railways of the second party, of the disputed mineral, to be taken from the reserved portion of Torbanehill, treated of in article 5.

The next, or 8th article, is, so far as money matters are concerned, by far the most important article in the minute in question; and our extracts from the 8th article must therefore be on a somewhat extensive scale:—

"Whereas the said missives in article 7th thereof contain the following stipulation relating to the lordship payable for coal:—'On all coal separated from dross by a riddle, or screen, or sieve, of $1\frac{1}{4}$ inches in the meshes, and in the raw state, sold on the hill, or used by the tenants themselves, or carried away, and otherwise disposed of, sixpence for every quantity of the same weight'—that is to say, $22\frac{1}{2}$ cwt. imperial weight; and it having been found in effect by the verdict of a jury in the action of declarator at the instance of the first party against the second party, that the disputed mineral falls under the before-quoted cause as to coal, it is hereby stipulated and agreed that, instead of the said fixed lordship of sixpence for every quantity of $22\frac{1}{2}$ cwt., there shall be paid by the second party upon the said disputed mineral, which the second party are working in Torbanehill, and disposing of as aforesaid, the lordships or royalties aftermentioned, viz.:—Firstly, A lordship or royalty on the said disputed mineral put out and removed by the second party from Torbanehill lands prior to the term of Lammas 1859, equal to one-tenth of the net prices realised by the second party as at the pit-mouth on the full quantity of the said disputed mineral." Secondly, a lordship or royalty on the said disputed mineral put out and removed by the second party from Torbanehill lands, from and after the said term of Lammas 1859, and in time coming during the continuance of the said lease, as follows:—Either, first, a lordship or royalty equal to one-seventh of the net prices realized by the second party as at the pit-mouth on the whole quantity of the said disputed mineral so put out and removed by them from and after the said last mentioned term; it being declared that the said net prices are not to be real fair *bonâ fide* prices actually realized by the second party as at the pit-mouth from the actual quantities of the disputed mineral delivered from and after the said term of Lammas 1859, under *bonâ fide* sales made by them. . . . Or, second, in lieu of a money lordship on the disputed mineral put out and removed from Torbanehill lands by the second party from and after the said term of Lammas 1859, and in time coming during the currency of the lease, there shall be delivered by the second party to the first party, in name of lordship or royalty, one-seventh part of the whole output of the disputed mineral itself, without deduction of any quantities or quantity whatever, on any account whatever, for any grounds whatsoever; the said seventh part to be separated from the whole output of the disputed mineral, and to be delivered to the said first party, or others appointed by them, at the pit-mouth of every pit on Torbanehill, in which the disputed mineral is at present, or shall hereafter be worked by the second party during the currency of the said lease.

The remaining articles relate to matters of a technical character.

COAL OIL MANUFACTURE IN AMERICA.

The *Scientific American* says:—"An approximate estimate of the quantity of illuminating coal oil manufactured daily in the United States during the month ending December 31, 1859, exhibits the following figures:—

Name or Place of Works.	Galls.
Downer, Boston, Mass.	1500
Glendon, " "	1000
East Cambridge, "	800
Page and Co., "	600
Suffolk, "	300
Portland, Maine.	500
New Bedford.	300
Hartford, Conn.	200
Kerosene Co., New York.	2500
Columbia Co., "	800
Carbon Co., "	300
N. Y. C. O. Co. "	400
Empire State Co. "	200
Several others in New York.	500
Philadelphia Pa.	500
Pittsburgh, (four firms).	2000
Great Western, Ohio.	500
Newark Region, Ohio.	2500
Wheeling, Va.	200
K. C. C. M. and O. M. Co., Kanawha, Va.	300
G. R. C. and O. Co., Kanawha, Va.	300
Greer, " "	200
Staunton, " "	—
Atlantic, " "	—
Maysville, Co., Ky.	400
Union Co., "	600
Ashland, "	—
Covington, "	—
Breckenridge "	250
Newport "	300
Eureka, Cincinnati, Ohio.	600
Rosecras and Co., Cincinnati.	300
Phœnix, "	200
St. Louis, Mo.	200
Otherwise.	3500
Total number of gallons daily	22,750

"We will not assert that the estimate is quite correct; some establishments are probably over, others underrated; yet we believe that the sum total is a pretty close approximation to the actual quantity of burning coal oils now made daily in this country. The produce of the oil springs has been omitted, as a reliable statement about their produce could not be procured. We will now draw a few general conclusions. It is presumed there have been sold by the several manufacturers of coal oil lamps and burners from 250,000 to 300,000 dozens burners and lamps, of which about 150,000 dozens are in use, the balance being in the hands of dealers. A coal oil lamp will consume about four gallons of oil during the year. The amount of oil burned by the above 1,800,000 lamps is consequently 7,200,000 gallons per year, or about 20,000 gallons every day. This shows that the amount of oil manufactured is in advance of the amount consumed.

"In order to make 22,750 gallons of burning oil it will require 75,000 gallons of crude coal oil, to make which requires 60,000 bushels of cannel coal.

"It will cost, to build crude oil and refining works, to make the named quantity of oil each day, $3,000,000; but the actual outlay for the oil works at present at work does not fall short of $8,000,000.

"The value of chemicals used in the purification of coal oil will amount to over $2000 per day.

"The number of barrels used to hold coal oil will be between 500 and 600, representing the value of $1000, and the labour of 400 men.

"The value of the burning coal oil itself will amount to over $16,000 per day, or more than $5,000,000 a year.

"All of this does does not include heavy oil and paraffine, the sale of which is limited and uncertain.

"The number of workmen employed in the several coal oil works in this country will reach 2000; that of the miners engaged in mining cannel 700 or more. Besides this, there are a large force of men employed in making lamps, burners, wicks, chemicals, &c.

"If we take into mind that, two years ago, there were only two or three oil works in this country, the above statements form a strong illustration of the impetuous energy with which the American mind takes up any branch of industry that promises to pay well. As far as coal oil is concerned, the rapidity with which the manufacture of the beautiful illuminator has been propagated, amounts (like the cultivation of the *morus multicaulis*, some years ago) to a mania."

REMARKS ON INUNDATIONS.

By M. Valles,

Ingénieur-en-Chef des Ponts et Chaussées.

(*Les Nouvelles Annales de Construction*, April, 1859.)

After the disasters caused by the floods of 1856, the Government authorities instituted, on a wide basis, a Special Commission on Inundations, which was charged with the duty of investigating in all its bearings the complicated question as to what means should be adopted to prevent the recurrence or to diminish the severity of these dangerous phenomena.

To transform into powerful fertilizing agents the waters which so frequently devastate our plains—to secure, at all times, a safe navigation on the most variable streams—to convert into an abundant and regular source of motive power those storm-waters which continually menace our great centres of industry—in a word, to make of an enemy, frequently so terrible, a valuable friend to all our labours and a tractable assistant in our agriculture and our manufactures—such was the object to be attained by this inquiry. Never was a problem more elevated in character, or of greater importance to the national wealth, submitted to the consideration of the engineers, agriculturalists, and philosophers of a great country. It is to be hoped that the disasters of 1856 will not be forgotten, like those of 1846 were. Preventive works will, it is to be hoped, no longer remain in the form of projects or of indefinite phantasies.

The management of water, with especial reference to agriculture and inundations, must therefore be, at the present day, the great study of engineers and of all enlightened men: each should contribute the quota of his abilities, ideas, and experience to this great undertaking. M. Valles was one of the first to respond to this call. Having prepared himself for his work by his previous studies, he was enabled, in the month of December, 1856, to present a manuscript of his memoir to the meeting convened by the *Académie de Bourdeaux*.

M. Manès, *Ingénieur-en-Chef des Mines*, reporter of the committee appointed to examine the papers, expressed his opinion of the important memoir under consideration in the following terms:—"The memoir No. 791—the most voluminous and the best of all—is a true exposition of the subject, in which are described with the greatest care the phenomena of rain, tides, methods of preservation, ways and means. There is nothing in it vague and indefinite; every assertion it contains is confirmed by examples—every idea put forth is accompanied by corroborative facts. This exceedingly well-written memoir is remarkable for high philosophical considerations. It must have required an immense amount of research, and bears witness in all its parts to the profound erudition of its author." An enumeration of the principal divisions of the memoir of M. Valles will enable us clearly to understand the course he has taken, and the importance of the subjects treated of.

The two first chapters are devoted to the phenomena of rain and to the consideration of the permeability of strata. The author details in the most complete manner many facts not generally known; and deduces, by comparison, many general considerations of great importance. The third chapter treats of the tides, their advantages and disadvantages. The fourth chapter is devoted to the demonstration of the dangers attending the use of insubmergible longitudinal embankments. The development of the principal ideas of the author as to the means to be employed in order to mitigate the ruinous effects of floods and to secure the advantages to be derived from them, occupies the fifth chapter. Reservoirs and transverse weirs appear to M. Valles to be the proper basis of every efficient system. He gives, besides, a detail of the observations required in order to obtain the necessary data for calculating the dimensions of these works, for we are far from possessing the information necessary for the preparation of general and definite projects. The sixth chapter contains a remarkable dissertation on the principal systems which have been proposed to counteract these floods. Some of the author's conclusions may, perhaps, be criticized, but even his opponents will find in his work the best collection of information necessary to the subject under discussion. Finally, the memoir concludes with estimates of the cost of the works proposed, and a consideration of the steps to be taken to cover it. The author has taken the basin of the Loire as an example of the application of his scheme. He estimates the outlay required in its execution at £2,800,000, and he conjectures that five times that amount would suffice for the protection of the whole of France from the consequences of floods.

One general idea predominates throughout the memoir of M. Valles, and appears more strongly supported in each succeeding page, and that is, the intimate connexion between the agricultural question and the problem of the inundations—the indispensable necessity of keeping in view the two subjects in all our operations, and combining unceasingly the investigations of the hydraulic service with those relating to the floods. The works designed to prevent the disasters occasioned by the floods should therefore, at the same time, effect the irrigation and the dressing of the arable lands. The importance of these agricultural operations is clearly demonstrated by the author.

M. Valles insists, with great justice, and more earnestly than is generally done, on the fertility of the mud carried down by our rivers in the time of floods, and on the immense value of the products of that kind carried down and at present lost in the sea. But still, perhaps, he does not insist with sufficient weight on the actual amount of their value. Unfortunately we have not at hand the necessary elements for the complete consideration of the question, but a single item will prove that the subject is deserving of especial consideration. It is generally admitted that the Garonne, in time of high flood, brings down 10,000 mètres cube, and that its waters contain three kilogrammes of mud per mètre cube. These data, in conjunction with the analysis of the mud, enable us to calculate that the river brings down in 24 hours a quantity of fertilizing matter containing 5,184,000 kilogrammes of nitrogen, that is to say, as much of that element as would be found in 34,560 tons of Peruvian guano—nearly the total amount of the annual importation of that substance into France.

Thus, one of our rivers (the muddiest, it is true) brings down to the sea every day of high flood the value of 8,000,000 frs. or 10,000,000 frs. in excellent manure. The mud of the Loire, although, indeed, much less abundant, is still richer in nitrogen. Reduce the foregoing quantity as much as you will, so as to allow for any possible exaggeration in the computation of the amount brought down or the number of the floods, and, although it is not possible to retain the whole of the mud, still the fact remains established, that the floods deprive our agriculture of a quantity of fertilizing matter, whose value ought in every project to be taken into very serious consideration.

Bilston Gas Company.—The Fifteenth Annual Meeting of the Bilston Gaslight and Coke Company was held at the Bull's Head Inn, High Street, on Monday, the 2nd inst.—Mr. R. Bew, chairman of the company, presiding. The meeting was a numerous one; and the report, which follows, highly satisfactory:—"For the year ending 30th of September, 1859, the profit had been £2159. 5s. 4d., which with £189. 7s. 8d., an unappropriated balance of last year's profits, will make the sum of £2348. 13s. The directors proposed appropriating the amount at their disposal thus:—To pay a dividend of 8s. per share, £2000; add to the reserve-fund £200; to write off bad debts, £39. 11s. 10d.; and carry forward to next year's accounts, £109. 1s. 2d. During the past year the meter-rent has been abolished, and the prices of gas reduced, and an increase in the number of consumers has been the result. The mains of the company have been recently extended to Coseley, Wallbrook, and Cann Lane, in answer to several numerously signed requisitions from those districts." The report was adopted unanimously. The three directors retiring by rotation, namely, Messrs. John Bullock, Thomas Baker, and William Jacks, were re-elected; as was also the auditor, Mr. William Hatton.

Reduction in the Price of Gas at Huddersfield.—The directors of the Huddersfield Gas Company have announced a reduction in the price of gas from 4s. to 3s. 6d. per 1000 cubic feet.

Adoption of Lord Redesdale's Act in Bristol.—A resolution for the adoption of this Act was passed unanimously at a meeting of the Bristol Town Council held on the 2nd inst., and an inspector is to be appointed at the next meeting.

The Metropolitan Main Drainage.—Eleven tenders were received by the Metropolitan Board of Works on Friday, the 6th inst., for the construction of the southern outfall main sewer, and were as follows:—

Peto and Betts	£431,715	9	1
Edward Thirst	373,000	0	0
William Tredwell	348,530	14	9
William Moxon	337,000	0	0
William Dethick	330,000	0	0
William Hill	328,000	0	0
Joseph Diggle	328,000	0	0
Helling and Co.	315,000	0	0
W. H. Roe	296,000	0	0
George Baker and Son	294,000	0	0
Rowland Brotherhood	282,550	0	0

The tender of Mr. Rowland Brotherhood, of Chippenham, Wilts, being the lowest, was accepted.

Advertisements.

THE STANDARD CUBIC FOOT.

E. W. LADD and CO. are now prepared to supply Copies of the Standard Cubic Foot constructed by them for the Office of Her Majesty's Exchequer.

E. W. LADD AND CO.,

Standard Weight and Measure Manufacturers, and Hydrometer, &c., Makers to the Board of Inland Revenue,

1, OLD JEWRY, LONDON.

Share List of Gas Companies.

(Directors and Managers of Gas-Works are earnestly requested to enable us to rectify the errors and fill up any omissions in the following List.)

The Companies whose names are printed in italic type are incorporated by Act of Parliament.

No. of Shares issued.	Amount per Share.	Name of Company.	Amount paid up per Share.	Div. per Cent. per Annum.	Price per Share.
	£	**ENGLAND.**	£ s d	£ s d	£ s d
		Aberavon			
		Aberdare			
		Abergele			
		Aberystwith			
530	10	Abingdon	10 0 0	6 0 0 & Bns. of £3.	12 0 0
1050	10	*Accrington Gas & Water*	10 0 0		15 0 0
1050	10	Do., new shares	10 0 0		15 0 0
2100	5	Do., do.	5 0 0		7 10 0
2100	5	Do., do.	1 0 0		1 10 0
2100	2½	Do., do.	0 10 0		0 15 0
1000	5	Airdale (Limited)	5 0 0	8 0 0	7 10 0
200	5	Do., new shares	1 15 0	8 0 0	
24	75	Alcester	75 0 0	4 0 0	80 0 0
128	10	Aldborough (Lim.)	10 0 0	5 0 0	
1500	10	Aldershot (Lim.)			
300	6	Alfreton	6 0 0	5 0 0	5 10 0
		Alnwick			
		Alston Moor			
250	10	Alton	10 0 0	10 0 0	12 0 0
1600	5	Aitrincham	5 0 0	6 0 0	6 0 0
		Amersham			
170	10	Ampthill	10 0 0	4 0 0	9 0 0
350	10	Andover	10 0 0	6 0 0	
358	5	Appleby	5 0 0	2 10 0	2 15 0
230	10½	Arundel	10 10 0	10 0 0	10 10 0
250	10	Ashbourne, Derby	10 0 0	6 0 0	13 10 0
292	5	Ashburton	5 0 0	5 0 0	
84	30	Ashby-de-la-Zouch	30 0 0	6 0 0	
700	10	Ashford (Limited), Kent	10 0 0	6 0 0	11 10 0
1600	30	*Ashton-und.-Lyne*	30 0 0	10 0 0	60 0 0
590	5	Atherstone	5 0 0	9 0 0	8 10 0
		Attleborough			
		Axminster			
200	20	Aylesbury	20 0 0	5 0 0	21 0 0
150	10	Aylsham (Lim.), Norfolk	10 0 0	5 0 0 & Bns. of 5s. per sh.	12 10 0
3000	10	*Bacup (Rossendale Union)*	10 0 0	7 0 0	16 10 0
600	10	Do., preference	10 0 0	7 0 0	16 10 0
		Bakewell			
200	10	Baldock	10 0 0	5 0 0	10 0 0
1000	10	Banbury (Limited)	10 0 0	7 10 0	15 0 0
350	5	Bangor (Limited)	5 0 0		5 0 0
500	5	Barking, Essex	5 0 0	5 0 0	5 0 0
260	10	Barnard Castle	10 0 0	5 10 0	10 15 0
800	5	Barnet	5 0 0	6 0 0	5 10 0
		Barnsley £6000		7 10 0	
109	20	Barnstaple	20 0 0	7 10 0 & Bns. of 10s.	
1158	2	Barton-on-Humb.	2 0 0	5 0 0	2 0 0
120	25	Basingstoke	25 0 0	8 0 0	30 to 34
2500	16	*Bath*, A shares	16 0 0	8 0 0	} 37 10 0
2500	8	Do., B shares	8 0 0	7 0 0	} united
2500	10	Do., C shares	5 0 0	7 0 0	7 10 0
		Battle £2000		6 0 0	
56	26⅔	Bawtry	26 12 6	6 0 0	25 0 0
710	10	*Beccles Gas & Water*	10 0 0	2 10 0	
300	30	Bedford	25 0 0	4 0 0	20 0 0
350	10	Bedworth	10 0 0	7 0 0	11 10 0
300	3	Belford	3 0 0		1 10 0
		Bedale, Yorkshire			
350	10	Belper	10 0 0	10 0 0	14 0 0
		Beaminster			
1086	10	Berwick & Tweedmouth	10 0 0	7 0 0	12 10 0
		Bewdley			
330	10	Bideford	10 0 0	6 0 0	10 10 0
		Biggleswade			
200	10	Bicester	10 0 0	5 10 0	11 0 0
5000	5	*Bilston*	5 0 0	8 0 0	7 0 0
200	10	Bingham	10 0 0	4 0 0	
		Bingley £7400		4 0 0	
1200	80	*Birmingham*, A shares	80 0 0	9 0 0	145 0 0
400	8	Do., B shares	8 0 0	9 0 0	14 10 0
1300	40	Do., new shares	40 0 0	7 10 0	60 0 0
1200	40	Do., new shares	30 0 0	7 10 0	45 0 0
2400	50	*Birmingham & Staffordshire*	50 0 0	10 0 0	104 to 105
2400	25	Do., new shares	25 0 0	10 0 0	52 to 52½
7020	20	Do., do.	17 0 0	10 0 0	40 to 42
		Bishop's Auckland			
230	10	Bishop's Stortford	10 0 0	5 0 0	10 0 0
6000	15	*Blackburn*	15 0 0	10 0 0	25 0 0
		Blandford			
		Blyth & Cowpen			
		Bognor			
3909	16⅔	*Bolton*	16 10 0	9 19 8	35 0 0
7466		Do., new shares	1 0 0		
800	10	*Boston*	10 0 0	8 10 0	
1200	10	Do., new shares		8 10 0	
		Boughton Blean			
193	10	Bourne	10 0 0	5 0 0	
160	10	Brackley	10 0 0	6 0 0	10 0 0
		Bradford, Wilts			
	25	*Bradford, Yorkshire*	25 0 0	10 0 0	40 0 0
		Brampton, Cumberland			
		Brandon, Suffolk			
579	10	Brecon (Limited)	10 0 0	8 0 0	14 0 0
		Bridge-end, Glamorganshire			
6000	5	*Brierly Hill*	5 0 0	4 0 0	5 2 6
		Brighouse			
2250	20	*Brighton*	20 0 0	6 0 0	16 to 18
1125	20	*Brighton*, new shares	16 0 0	6 0 0	12 to 14
2471	20	*Brighton & Hove*	20 0 0	6 0 0	19 to 21
107	8	Do., new shares			
181250	Sk.	*Bristol United*	Stock.	9 0 0	181 to 183
150	8	Brixham	8 0 0	5 0 0	
		Braintree			
39700 *l*	Sk.	*Brentford*	All.	4 0 0	
1659	20	Do., preference	1 0 0	5 0 0	
		Brentwood			
200	50	*Bridgwater*	50 0 0	7 0 0	50 0 0
400	10	Bridlington	10 0 0	7 10 0	12 10 0
		Bridport			
		Brigg			
		Broadstairs			
		Bromsgrove			
1000	5	Bromley, Kent	5 0 0	7 0 0	
100	10	Bromyard (Lim.)	10 0 0		
		Broughton			
120	10	Bruton	10 0 0	4 0 0	8 to 9
		Brynmawr			
100	25	Buckingham	25 0 0	6 0 0	26 to 27
500	1	Burley-in-Wharfdale (Limited)	1 0 0	5 0 0	1 1 0
1600	5	*Burslem & Tunstall*	5 0 0	8 0 0	
2240	5	Do., new shares	5 0 0	6 0 0	
1200	10	*Bury St. Edmund's*	10 0 0	10 0 0	17 10 0
1800	10	Do., new shares	1 10 0	10 0 0	
303	10	Buxton (Limited)	10 0 0	7 10 0	14 0 0
187	5	Callington	5 0 0		5 0 0
215	10	Calne, Wilts	10 0 0	6 0 0	10 0 0
		Camborne			
600	50	*Cambridge*	50 0 0	7 0 0	80 0 0
160	12½	Do., new shares	12 10 0	7 0 0	20 0 0
640	8½	Do., do.	4 0 0	7 0 0	6 0 0
240	50	*Canterbury Gas & Water*	50 0 0	£6 & Bns.	52 to 60
240	25	Do., do.	25 0 0	Bns.	25 to 30
240	12½	Do., do.	12 10 0	of	12½ to 15
240	6½	Do., do.	6 5 0	£2.	6½ to 7½
800	25	*Cardiff*, A shares	25 0 0	10 0 0	42 0 0
800	25	Do., B shares	25 0 0	8 0 0	38 0 0
160	25	Carmarthen	25 0 0	5 0 0	30 0 0
		Carnarvon			
		Carshalton			
200	6	Castlecary	6 0 0		5 0 0
200	10	Castle Donnington	10 0 0	6 0 0	12 14 0
249	5	Castleford	5 0 0	5 0 0	5 0 0
400	5	Castletown, Man.	5 0 0	5 0 0	5¼ to 5¾
620	2	Cawood (Limited)	2 0 0	4 0 0	
		Chatteris			
300	10	Cheadle	10 0 0	5 0 0	10 0 0
100	25	Chelmsford	25 0 0	5 0 0	40 0 0
100	25	Do., new shares	15 0 0	5 0 0	15 0 0
2500	16	*Cheltenham*, A shares	16 0 0	8 0 0	
2500	8	Do., B shares	8 0 0	7 0 0	
		Do., new shares		7 0 0	
500	10	*Chepstow*, A shares		5 0 0	
200	10	Do., B shares		5 0 0	
		Chertsey (*see* Co. & General, London)			
230	10	Chesham	10 0 0	5 0 0	10 10 0
300000 *l*	Sk.	*Chester United*	Stock.	5 0 0	100 0 0
20000 *l*		Do.	,,	7 0 0	140 0 0
465	10	Do.	10 0 0	7 0 0	14 0 0
35	10	Do., new shares	2 10 0	7 0 0	3 10 0
500	10	Do., do.	0 10 0	7 0 0	0 14 0
250	5	Chester-le-Street	5 0 0	6 0 0	5 0 0
19200 *l*	Sk.	*Chesterfield Gas & Water*		5 0 0	
400	50	Do.	50 0 0	5 0 0	52 0 0
240	25	Chichester	25 0 0	6 0 0	30 0 0
		Chippenham			
329	10	Chipping Norton (Limited)	10 0 0	5 0 0	
100	10	Chipping Ongar	10 0 0	2 10 0	5 0 0
838	20	Chorley	20 0 0	7 0 0	27 0 0
200	5	Church Stretton (Limited)	5 0 0		
		Chowbent, Lancashire			
		Christchurch			
680	10	Cirencester	10 0 0	5 0 0	11 0 0
357	10	Cleckheaton, A shares	10 0 0	5 0 0	
357	10	Do., B shares	7 10 0	5 0 0	
350	10	Clevedon	10 0 0	4 10 0	10 0 0
		Clitheroe			
1132	5	Cockermouth	5 0 0	5 0 0	5 5 0
300	5	Coggeshall	5 0 0		4½ to 5
900	20	Colchester	20 0 0	7 0 0	24 0 0
160	10	Collingham (Lim.)	10 0 0		10 0 0
		Collumpton			
150	20	Colne, Lancashire	20 0 0		36 0 0
150	10	Do.	10 0 0		18 0 0
150	5	Do.	5 0 0	£10	9 0 0
150	5	Do., A shares	5 0 0		9 0 0
150	5	Do., B shares	5 0 0		9 0 0
150	5	Do., C shares	2 0 0		5 0 0
		Coleford, Gloucest.			
200	25	*Congleton*	25 0 0	5 0 0	31 0 0
320	5	Conway (Limited)	5 0 0		5 0 0
1600	25	*Coventry*	25 0 0	8 0 0	35 0 0
	25	Do., new shares	25 0 0	7 10 0	
		Cowbridge			
		Corsham			
5000	10	Cowes	10 0 0	5 0 0	
200	10	Croft & Hurworth-upon-Tees (Lim.)	9 0 0		
1200	1	Crook (Limited)	1 0 0	10 0 0	1 5 0
251	5	Crowland	5 0 0	7 0 0	
181	10	Crowle, Lincoln	10 0 0	10 0 0	
4000	5	*Croydon Commercial*	5 0 0		
		Cranbrook. £1900		5 0 0	
		Crayford & Bexley			
420		Crediton	5 0 0	5 0 0	6 0 0
250	20	Dartford	20 0 0	7 0 0	28 0 0
700	5	Dartmouth (Lim.)	5 0 0	6 0 0	5 0 0
125	20	Daventry	20 0 0	6 0 0	24 8 0
165	10	Dawley	10 0 0	5 0 0	10 0 0
346	5	Dawlish	5 0 0	8 0 0	7 10 0
800	10	Deal & Walmer	10 0 0	7 10 0	10 0 0
1200	1	Deddington	1 0 0		
		Delph, Yorkshire			
500	6	Denbigh	6 0 0	5 0 0	6 0 0
1070	25	*Derby*	25 0 0	10 0 0	55 10 0
4000	5	*Dewsbury & Batley*	5 0 0	7 10 0	7 10 0
2000	5	Do., new shares	3 0 0	7 10 0	
7000	5	*Devonport*	5 0 0	8 0 0	8 0 0
		Dolgelly			
340	25	Dorchester	25 0 0	8 0 0	27 0 0
120	25	Dorking	24 0 0	5 0 0	25 0 0
192	25	Douglas, Isle of Man	25 0 0	8 0 0	30 0 0
209	52½	*Dover*	52 10 0	10 0 0	83 to 84
500	10	Dowlais (Limited)	10 0 0	8 0 0	12 0 0
25	60	Downham Market	60 0 0	7 10 0	
		Driffield			
		Droitwich			
		Dudley			
500	20	Droylsden	10 0 0		
1500	20	*Dukinfield*	9 5 0	10 0 0	18 10 0
200	10	Dunmow	10 0 0	5 0 0	10 0 0
		Dunstable			
900	10	Durham	10 0 0	10 0 0	} £26
900	10	Do., new shares	5 10 0	10 0 0	}
250	10	Dursley, Gloster	9 0 0	11s. per share.	9 5 0
150	5	Easingwold	5 0 0	5 0 0	
400	10	Eastbourne	10 0 0	5 0 0	11 0 0
90	20	East Dereham	20 0 0	5 0 0	21 0 0
356	5	East Grinstead	5 0 0	6 0 0	5 0 0
1200	5	East Retford	5 0 0	10 0 0	7 10 0
		Egremont, Cumberland			
703	6½	Eliand	6 10 0	8 0 0	10 0 0
800	5	Elsecar (Limited)	5 0 0	5 0 0	5 12 0
		Eltham			
200	10	Emsworth			
400	5	Enfield	5 0 0	5 0 0	5 0 0
300	19	Epsom & Ewell	19 0 0		
		Eton (Cannel Gas)			
700	10	Evesham (Lim.)	10 0 0	6 0 0	9½ to 10
1600	25	*Exeter*	25 0 0	8 0 0	40 to 42
250	10	Exmouth	10 0 0	5 0 0	10 0 0
58	25	Eye	25 0 0	5 0 0	25 0 0
170	10	Fairford	10 0 0	3 0 0	
100	38	Fareham	38 0 0	5 0 0	
120	25	Farnham	25 0 0	10 0 0	42 0 0
		Farringdon			
		Faversham			
120	10	Fenny Stratford (Limited)	10 0 0	5 0 0	11 0 0
	5	Filey	5 0 0	5 0 0	5 0 0
300	10	Folkestone	10 0 0	10 0 0	15 0 0
240	10	Do., new	8 0 0	10 0 0	13 0 0
280	5	Framlingham	5 0 0	5 0 0	5 10 0
1155	1	Frodsham (Lim.)	1 0 0	2 10 0	1 0 0
		Frome			
12000 *l*	Sk.	*Gainsborough*	All	6 0 0	110 to 115
400	20	Do.	4 0 0	6 0 0	
170	10	Gillingham (Lim.), Dorset	10 0 0	3 0 0	
103	25	Glastonbury	25 0 0	4 0 0	15 0 0
		Glossop £10,000		9 0 0	
1000	25	*Gloucester*, A shares	25 0 0	10 0 0	30 to 32
856	6½	Do., B shares	6 5 0	7 10 0	7½ to 7¾
621	5	Gomersal	5 0 0	6 0 0	6 7 6
260	20	Godalming	20 0 0	5 0 0	20 0 0
300	5	Do., new shares	5 0 0	5 0 0	5 0 0
100	20	Do., do.	8 0 0		
100	5	Do., do.	2 0 0		
		Gorleston & Southdown			
		Gosport			
450	20	Grantham	20 0 0	7 0 0	28 0 0
1000	20	Gravesend	20 0 0	5 0 0	21 0 0
		Grays Thurrock			
643	5	Great Berkhampstead	5 0 0	6 0 0	5 10 0
210	10	Great Marlow	10 0 0	5 0 0	10 0 0
700	5	Great Harwood	5 0 0	4 5 0	
280	5	Do., new shares	1 0 0		
450	5	Great Wigston	5 0 0	6 0 0	
150	1	Do., new shares	1 0 0	6 0 0	
1000	10	*Great Grimsby*	9 10 0	8 0 0	13 to 14
		Great Torrington			
352	25	*Guildford*, A shares	25 0 0		
352	3	Do., B shares	3 0 0		
		Do., new shares			
1300	10	Guernsey	9 0 0	16s. per share.	18 0 0
		Guisborough			
		Gunislake			
140	10	Hailsham	10 0 0	6 0 0	10 0 0
40	50	Halesowen	50 0 0	6 0 0	
900 *l*	Sk.	Halesworth		7 10 0	
300	5	Do., new shares	5 0 0	7 10 0	6 0 0
240	5	Haltwhistle (Lim.)	5 0 0	4 10 0	5 0 0
		Hampton			
1000	10	*Harrogate*	8 15 0	5 0 0	8 15 0
6800	5	*Hartlepool Gas & Water*	5 0 0	7 0 0	
3322	5	Do., new shares	5 0 0	7 0 0	
9878	5	Do., do.	1 10 0	7 0 0	

No. of Shares issued.	Amount per Share.	Name of Company.	Amount paid up per Share	Div. per Cent. per Annum.	Price per Share.
	£		£ s d	£ s d	£ s d
		Harwich			
662	6	Haslingden	6 0 0	10 0 0	10 0 0
343	6	Do., A shares	4 0 0	10 0 0	6 0 0
1120	25	*Hastings & St. Leonards*	25 0 0		
500	5	Havant	5 0 0	3 0 0	5 0 0
		Haverhill			
244	5	Haworth	5 0 0		5 5 0
		Hay, Brecon			
4965	1	Hebden Bridge	1 0 0		
120	10	Hedon (Limited)	10 0 0	3 0 0	
145	12	Heiston	12 0 0	9 0 0	
250	10	Hemel Hempstead	10 0 0	4 0 0	7 0 0
300	10	Henley (Limited)	10 0 0		
		Hereford. £10,000		4 10 0	
300	10	Herne Bay	10 0 0	6 0 0	11 0 0
		Hertford			
270	10	Hexham	10 0 0	6 0 0	14 0 0
400	25	*Heywood*	25 0 0	10 0 0	
	25	Do., new shares	25 0 0	7 10 0	
		Higham Ferrers			
520	5	High Wycombe	5 0 0	6 0 0	6 16 0
		Highworth, Wiltshire			
280	10	Hinckley	10 0 0	5 0 0	9 0 0
		Hindley, Lancashire			
200	20	Hitchin	20 0 0	8 0 0	
200	5	Do., new shares	5 0 0	8 0 0	
400	10	Hythe & Sandgate (Limited)	10 0 0	6 0 0	10 15 0
		Hoddesden			
553	20	*Holmfirth*	19 0 0	5 0 0	19 0 0
960	5	Holyhead	5 0 0	6 0 0	6 2 6
		Holywell (*see* British Provincial)			
98	25	Honiton	25 0 0	3 12 0	20 0 0
1250	1	Honley (Limited)	1 0 0	5 0 0	1 0 0
6	500	Horncastle	£500		
1200	2½	Horsforth	2 10 0		2 10 0
142	20	Horsham	20 0 0	10 0 0	25 0 0
	10	Houghton-le-Spring	10 0 0	8 0 0	
		Howden			
		Hull-Sculcoates (*see* British Provincial)			
		Hull			
210	10	Hungerford	10 0 0	5 0 0	10 0 0
1450	20	Huddersfield	20 0 0	10 0 0	
250	20	Do., new shares	15 0 0	5 0 0	
860	10	Huntingdon and Godmanchester	10 0 0	4 0 0	10 0 0
600	10	Huyton & Roby	10 0 0	4 0 0	
2500	10	*Hyde*	9 0 0	5 10 0	10 15 0
		Idle & Eccleshill			
560	6½	Ilkestone	6 5 0	11 4 0	8 0 0
		Ilminster			
		Ilford			
198	12	Ilfracombe	12 0 0	4 0 0	8 to 9
		Ilkley			
		Ingatestone			
2800	10	*Ipswich*	10 0 0	8 0 0	15 to 16
		Ironbridge			
		Irthlingborough			
800	25	*Isle of Thanet* (Margate & Ramsgate.)	20 0 0	8 15 0	30 0 0
		Jersey, St. Helier's			
363	5	Kelvedon (Lim.)	5 0 0		
1842	9	*Kendal Union Gas & Water*	9 0 0	7 0 0	12 10 0
380	20	Do., preference	20 0 0	7 10 0	35 0 0
290	10	Kenilworth (Lim.)	10 0 0	4 0 0	10 0 0
400	5	Keswick	5 0 0	5 0 0	4 0 0
156	25	Kettering	25 0 0	5 10 0	26 10 0
		Keynsham			
		Kidderminster, £10,000		5 0 0	
		Kidsgrove			
		Kimbolton			
140	7	Kingsbridge	7 0 0		10 to 11
		Kingston-on-Thames			
		Kington, Hereford			
		Kirby Lonsdale			
		Kirkburton			
330	5	Kirkham, Lancashire	5 0 0	4 0 0	5 0 0
330	2½	Do., new shares	2 10 0	4 0 0	2 10 0
200	10	Kirton-in-Lindsey (Limited)	10 0 0	5 0 0	10 10 0
200	5	Knighton	5 0 0		
1000	10	*Knottingley*			
470	31½	*Lancaster*	31 10 0	7 2 10	45 to 46
470	6 gs.	Do.	6 6 0	7 2 10	9 to 9½
564	15⅔	Do.	15 15 0	5 0 0	21 to 22
50	25	Langport	25 0 0	4 0 0	15 0 0
		Launceston			
1000	20	*Leamington Priors*	20 0 0	8 0 0	25 0 0
250	20	Do., new shares	15 0 0	5 0 0	17 0 0
213	10	Leatherhead	10 0 0	5 0 0	10 0 0
		Ledbury			
		Leeds Old Comp.—			
2412	25	Old shares	25 0 0	10 0 0	46 to 47
951	25	New do.	25 0 0	6 0 0	29 to 30
		Leeds New Comp.—			
45000 *l*		Old stock	£100	10 0 0	177½–182½
35000 *l*		New do.	£100	6 0 0	117—118
7795	6½	Do.	3 15 0	6 0 0	4½ to 4¾
3900	10	*Leicester*	10 0 0	8 0 0	16¼ to 16¾
		Leigh			
	21	Leighton Buzzard	21 0 0	7 0 0	25 0 0
	10½	Do., new shares	10 10 0	7 0 0	12 10 0
400	10	Leominster	10 0 0	5 0 0	8 10 0
245	5	Leyburn, Yorkshire	5 0 0		6 0 0
330	25	Lewes, A shares	25 0 0	9 0 0	30 0 0
644	5	Do., B shares	5 0 0	9 0 0	6 0 0
		Leyland, Lancashire			
250	20	Lichfield	20 0 0	10 0 0	40 0 0
320	25	*Lincoln*	25 0 0	10 0 0 & Bns. of 12/6 per sh.	70 0 0
300	5	Lindfield (Limited)	5 0 0		5 0 0
240	5	Liskeard	5 0 0	8 0 0	6 0 0
240	5	Littlehampton	5 0 0	7 10 0	5 0 0
100		*Liverpool United*	£100	10 0 0	205 0 0
25		Do., ¼ share	25 0 0	10 0 0	51 5 0
		Llandudno Gas & Water			
		Llanelly £3000		5 0 0	
250	10	Llanrwst (Limited)	9 15 0	5 0 0	9 15 0
		LONDON COMPS.—			
5000	10	Anglo-Romano (*en commandite*)	10 0 0	8 0 0	10 to 11
5000	20	British Provincial	20 0 0	7 0 0	25⅛ to 26½
	20	Do., new (Norwich, Hull-Sculcoates, Shelton Potteries, Trowbridge, & Holywell.)	16 0 0	7 0 0	17 to 18
12000	50	*Chartered*	50 0 0	8 0 0	66 to 68
6000	50	Do.	10 0 0	8 0 0	12 to 13
10000	20	*City of London*, A shares	20 0 0	7 0 0	20 0 0
10000	10	Do., B shares	10 0 0	4 0 0	8 0 0
10000	25	*Commercial*	25 0 0	6 0 0	28 to 30
6000	25	Do., new shares	7 10 0	6 0 0	8 to 9
1180	5	County & General (Limited)	5 0 0	5 0 0	
		(Pembroke, Chertsey, Northfleet, Walton, & Lea Bridge.)			
4150	10	*Crystal Palace District*	10 0 0	6 0 0	11 0 0
850	10	Do.	2 0 0	6 0 0	
4000	50	*Equitable*	50 0 0	6 0 0	55 to 56
23406	10	European (Lim.) (Boulogne, Amiens, Rouen, Caen, Havre, & Nantes.)	10 0 0	6 0 0 & Bns. of £2.	10 0 0
17216	10	*Great Central Gas Consumers'*	10 0 0	5 10 0	11 0 0
13000	50	*Imperial*, old shares	50 0 0	9 0 0	80 to 81
13000	50	Do., new shares	15 0 0	9 0 0	29 0 0
1300	100	Do., bonds	£100	10 0 0	210 to 215
28000	50	*Imperial Continental* (Amsterdam, Berlin, Ghent, Hanover, Lille, Rotterdam, Aix-la Chapelle, Antwp., Bordeaux, Brussels, Cologne, Frankfort-on-M., Haarlem, Marseill. Toulouse, Vienna.)	43 5 0	7 0 0	46 to 48
3000	40	*Independent*	40 0 0	5 0 0 & Bns.	60 0 0
50000	1	Oriental (Limited), Calcutta	1 0 0		¾ to 1
50000	1	Do., new shares	0 15 0		½ to ¾
4904	50	*London*	50 0 0	3 0 0	35 to 40
5519	25	Do., 1st pref.	25 0 0	6 0 0	29 to 30
1921	50	Do., 2nd pref.	50 0 0	6 0 0	55 to 58
870	50	Do., 3rd pref.	50 0 0	6 0 0	53 to 56
20455 *l*		Do., 1st pref. sk		6 0 0	
13608 *l*		Do., 2nd pref. sk		6 0 0	
9000	60	*Phœnix*	52 0 0	7 0 0 & Bns.	62 0 0
5000	20	*Ratcliff*	16 0 0	5 0 0	16 0 0
4000	50	*South Metropolitan*	38 0 0	6 0 0 & Bns.	50 0 0
12633	10	*Surrey Consumers'*	10 0 0	8 0 0	11 0 0
2147	10	Do.	2 0 0	8 0 0	2 5 0
9000	50	United General (Dublin & Limerick)	50 0 0	2 0 0	19½ to 20
1500	10	*Wandsworth & Putney*	10 0 0		
1500	10	Do., new shares			
20000	10	Western (Lim.), A shares	10 0 0	7 0 0	12 to 13
10000	10	Do., B shares	0 10 0	7 0 0	0 17 0
2777	5	*West Ham*	5 0 0		
13223	5	Do., new shares			
10000	10	*Victoria Docks*			
		Long Buckby (L.)			
120	10	Long Sutton (Lim.)	10 0 0	7 10 0	11 to 12
250	5	Lostwithiel	5 0 0		6 0 0
250	1	Do.	1 0 0		1 0 0
		Loughborough			
240	25	*Louth*	25 0 0	10 0 0	
2500	10	*Lowestoft Gas & Water*			
		Llangollen			
611	5	Ludlow Union	5 0 0	5 0 0	5 to 5½
110	5	Do., pref. shares	5 0 0	5 0 0	
640	10	*Luton*	10 0 0		
640	5	Do., preferential	5 0 0		
640	5	Do., new shares	2 10 0		
100	20	Lutterworth	20 0 0	6 5 0	25 0 0
63	20	Lyme Regis	20 0 0	4 0 0	20 0 0
120	25	Lymington	25 0 0	5 0 0	25 0 0
		Macclesfd. £32,000			
300	10	Maidenhead	10 0 0	5 0 0	10 0 0
500	25	*Maidstone*, A shares	25 0 0	10 0 0	45 0 0
500	25	Do., B shares	25 0 0	4 0 0	20 0 0
	25	Do., new shares	25 0 0	7 10 0	
		Marlborough			
204	23	Maldon	23 0 0	7 0 0	27 0 0
200	10	Malmesbury	10 0 0	2 10 0	5 15 0
		Manningtree			
		Mansfield £5000		10 0 0	
150	10	Mansfield Woodhouse	10 0 0		
		March			
		Margate (*see* Isle of Thanet)			
132	25	Market Drayton			
		Market Harboro'	25 0 0	7 0 0	35 0 0
		Market Weighton			
150	10	Marsden (Lim.)	10 0 0	5 0 0	10 0 0
370	10	Maryport	10 0 0	6 0 0	12 0 0
500	5	Matlock Baths	5 0 0		
200	2	Measham (Lim.)	1 12 6	5 0 0	
		Melksham			
934	2	Meltham	2 0 0	4 10 0	
		Melton Mowbray			
		Merthyr Tydvil			
50	10	Mere	10 0 0		
3000	10	*Middleton*		10 0 0	
		Midsumr. Norton			
198	5	Mildenhall	5 0 0	5 0 0	
2000	5	Mirfield	5 0 0	5 0 0	6 5 0
700	10	Mitcham	10 0 0	10 0 0	14 10 0
650	5	Mold Gas & Water	5 0 0	7 10 0	6½ to 6¾
700	10	Monmouth Gas & Water	10 0 0	5 0 0	10 0 0
250	5	Montgomery (Ld.)	5 0 0		
150	10	Moreton-in-Marsh	9 2 6	4 0 0	9 2 6
1000	5	Morley, nr. Leeds	5 0 0	6 0 0	6 15 0
		Mossley			
		Mottram			
220	16	Morpeth	16 0 0	5 0 0	17 10 0
		Nantwich			
		Nayland			
		Neath			
185	10	Needham Market	10 0 0	4 0 0	
		Newark £5000		10 0 0	
250	20	Newbury	20 0 0	5 0 0	20 0 0
16000	8	Newcastle & Gateshead Union	8 0 0	6 0 0	8 10 0
		Newcastle-under-Lyne £6200		4 0 0	
250	5	Newent	5 0 0		
		Newhaven, Sussex			
		New Malton			
600	5	Newmarket	5 0 0	4 0 0	4 0 0
366	2	Do., preference	2 0 0	6 0 0	2 0 0
200	20	*New Mills & Hayfield*	15 10 0	5 0 0	
70	20	Newnham (Lim.)	20 0 0		21 0 0
		Newport Pagnell			
360	35	*Newport, Monmouth*, A shares	35 0 0	9 0 0	50 0 0
540	35	Do., B shares	35 0 0	7 10 0	42 10 0
		Newport, Salop			
250	5	New Romney (Ld.)	5 0 0	5 0 0	5 0 0
		Newton Abbott			
198	10	Newtown, Montgomeryshire	10 0 0	6 0 0	10 0 0
		Northallerton			
777	20	*Northampton*, A shares	20 0 0	10 0 0	
777	20	Do., B shares	20 0 0	4 0 0	
777	20	Do., C shares	10 0 0	7 10 0	
		Northfleet (*see* Co. & General)			
2914	5	N. Shields, Tynemouth	5 0 0	5 0 0	5 17 6
120	10½	North Walsham	10 10 0	5 0 0	10 15 0
371	15	Northwich	15 0 0	5 0 0	15 0 0
		Norwich (*see* Brit. Provincial)			
4000	50	*Nottingham*	50 0 0	5 0 0	
	50	Do., new shares	50 0 0	10 0 0	
268	8	Nuneaton (Lim.)	8 0 0	5 0 0	7 10 0
125	8	Do.	8 0 0	5 0 0	7 10 0
		Oaken Gates, Salop			
240	5	Oakhampton (Ld.)	5 0 0		
200	10	Odiham	10 0 0	5 0 0	10 0 0
		Olney			
360	10	*Ormskirk*, old shares	19 0 0	8 0 0	14 0 0
1080	10	Do., new shares	4 10 0	8 0 0	6 4 6
1600	5	*Ossett & Horbury*	5 0 0	5 0 0	5 10 0
800	5	Do.	4 5 0	5 0 0	
		Otley, Yorkshire			
80	25	Oundle	25 0 0	7 0 0	25 0 0
		Over Darwen, £8000		5 0 0	
1694	1	Over & Wharton (Limited)	1 0 0		1 2 0
120	150	*Oxford*	£150	8 0 0	230 0 0
		Padiham			
		Painswick			
		Pately Bridge, Yorkshire			
300	5	Peel, Isle of Man	5 0 0	7 0 0	6 to 7
		Pembroke (*see* Co. & General)			
500	20	*Peniston, Thurlstone, & Ozspring*			
250	20	Penrith	15 0 0	6 10 0	21 0 0
153	20	Penzance	20 0 0		15 0 0
200	10	Petworth	10 0 0	9 0 0	14 0 0
320	5	Petersfield	5 0 0	5 0 0	
		Pickering			
2500	10	*Plymouth & Stonehouse*	10 0 0	10 0 0	18 0 0
2500	10	Do.	8 0 0	7 10 0	11 0 0
160	10	Pocklington	10 0 0		5 0 0
		Ponder's End & Enfield Highway (Limited)			
		Pontefract			
		Pontypridd		4 0 0	
400	10	Poole	10 0 0	10 0 0	15 0 0
344	2	Do.	2 0 0	10 0 0	3 0 0
		Port Madoc			
600	53	*Portsea Island*	53 0 0	6 0 0	63 0 0
600	50	Do.	50 0 0	6 0 0	60 0 0
		Potton, Bedfordshire			
400	10	Prescott	10 0 0	5 0 0	
		Presteign			
60000 *l*	Sk.	*Preston*	All.	10 0 0	200 0 0
3000	20	Do.	11 0 0	10 0 0	23 0 0

No. of Shares issued.	Amount per Share.	Name of Company.	Amount paid up per Share.	Div. per Cent. per Annum.	Price per Share.
	£		£ s d	£ s d	£ s d
600	20	*Pudsey*	20 0 0	7 10 0	30 0 0
600	6⅔	Do., new shares	4 13 4	7 10 0	4 13 4
93	20	Pwllheli	20 0 0	2 10 0	25 0 0
		Quorndon & Mountsorrel			
900	10	*Radcliff & Pilkington*, No. 1	10 0 0		
2100	10	Do., No. 2	6 0 0		
200	20	Ramsay, I. of Man	20 0 0	5 0 0	22 10 0
		Ramsgate (*see* Isle of Thanet)			
		Rawmarsh			
1019	10	*Reading*	10 0 0	6 0 0	9 0 0
500	20	*Reading Union*	20 0 0	7 10 0	21 0 0
400	5	Redcar	5 0 0		
		Redditch			
		Redruth			
		Reigate			
1200	1	Repton (Limited)	1 0 0	5 0 0	1 1 0
2000	10	Richmond, Surrey (Limited)	10 0 0	7 0 0	15 0 0
400	5	Rickmansworth	5 0 0		5 0 0
180	10	Ringwood	10 0 0	5 0 0	10 0 0
180	33⅓	Ripon	33 10 0	4 10 0	
		Rochester & Chatham £20,000		6 0 0	
		Rochford			
		Romford			
		Romsey			
200	25	*Rotherham*, A shares	25 0 0	8 0 0	36 0 0
200	12½	Do., B shares	12 10 0	8 0 0	18 0 0
600	12½	Do., C shares	8 0 0	8 0 0	11 0 0
600	20⅚	Do., D shares	2 10 0	8 0 0	3 10 0
350	10	Royston	10 0 0	5 0 0	9 10 0
150	20	Rugby	20 0 0	10 0 0	
150	5	Do.	5 0 0	10 0 0	
150	6⅔	Do.	6 13 4	10 0 0	
150	10	Do., new shares	10 0 0	10 0 0	
150	2½	Do., do.	2 10 0	10 0 0	
150	3⅓	Do., do.	3 6 8	10 0 0	
430	10	Rugely	10 0 0	5 0 0	10 10 0
		Runcorn £11,000		7 10 0	
114	31¼	Ruthin	31 5 0	6 16 0	40 0 0
500	10	Ryde	10 0 0	6 0 0	12 0 0
		Rye			
		Saddleworth			
225	22	Saffron Walden	22 0 0	4 0	16 to 18
1400	5	St. Alban's Gas & Water (Limited)	5 0 0	5 0 0	5 5 0
		St. Austel			
320	5	St. Asaph (Lim.)	5 0 0		
		St. Colomb			
3000	10	*St. Helen's*	10 0 0	10 0 0	
		St. Ives, Huntingdon			
		St. Ives, Cornwall			
400	25	Salisbury	25 0 0	6 0 0	28 0 0
		Sandbach			
381	10	Sandwich	10 0 0	5 0 0	9 10 0
100	10	Saxmundham	10 0 0	5 0 0	
2000	10	*Scarborough*	10 0 0	10 0 0	18 0 0
	10	Do., preference	10 0 0	6 0 0	
240	5	Sedburgh	5 0 0		
300	16	Selby	16 0 0	5 0 0	
140	5	Settle (Limited)	3 10 0	5 0 0	
290	10	Sevenoaks	10 0 0	4 0 0	10 0 0
300	10	Shaftesbury (Lim.)	10 0 0	5 0 0	8½ to 9
565	5	Sheepshed (Lim.)	5 0 0	6 0 0	6 0 0
135000	Sk.	*Sheffield United*, A shares	All.	10 0 0	192 0 0
39264 *l*	Sk.	Do., B shares	All.	8 0 0	162 0 0
4800	16 g.	Do., D shares	9 0 0	8 0 0	8 7 6
1600	6 gs.	Do., E shares	3 7 6	8 0 0	3 2 6
600	5	Shefford (Limited)	4 0 0		
		Shelton, Potteries (*see* Brit. Prov.)			
350	10	Shepton Mallet	10 0 0	7 10 0	10 0 0
800	5	Sherborne	5 0 0	7 10 0	5 0 0
240	25	Shotley Bridge (Limited)	25 0 0	7 0 0	26 to 28
150	10	Somerton	10 0 0		
2000	10	*South Shields*	10 0 0	7 0 0	10 11 6
		Shiffnal, Salop			
1000	5	*Shipley*	5 0 0	6 0 0	7 10 0
150	10	Shipston-on-Stour	10 0 0	4 0 0	
1000	10	*Shrewsbury*, A shares	10 0 0	10 0 0	22 0 0
1000	10	Do., B shares	10 0 0	5 0 0	11 0 0
530	10	Do., new shares	10 0 0	7 10 0	15 0 0
400	15	Skipton	15 0 0	5 0 0	18 0 0
400	2½	Do., new shares	2 10 0	5 0 0	3 0 0
250	20	Sleaford	20 0 0	5 0 0	20 0 0
250	10	Slough	10 0 0		
340	5	Snaith	5 0 0		4 0 0
		Soham			
354	5	Southam	5 0 0		
		Southend, Essex			
300	5	Southwold	5 0 0	5 0 0	5 0 0
220	10	South Molton	10 0 0	5 10 0	7 10 0
1000	50	*Southampton*	50 0 0	5 0 0	
248	10	Southwell (Lim.)	10 0 0	5 0 0	11 to 11¼
		Sowerby, Yorkshire			
1470	1	Spennymoor (Ld.)	1 0 0		
		Spittal, Berwick-on-Tweed			
400	5	Spilsby	5 0 0		
178	5	Staindrop	5 0 0	6 0 0	5 0 0
750	5	Stretford	5 0 0	6 0 0	5 0 0
2000	6⅔	*Stafford*	6 13 4	6 10 0	10 0 0
2000	6⅔	Do., new shares	4 0 0	6 10 0	
248	25	Staines & Egham	25 0 0	6 0 0	26 to 27
		Staley Bridge, £15,000		10 0 0	
225	50	*Stamford & St. Martin's*	50 0 0	8 0 0	45 to 50
150	10	Staveley (Limited)	10 0 0	5 0 0	11 10 0
300	5	Stevenage	5 0 0		5 0 0
2000	10	*Stoke Fenton & Longton*	10 0 0	7 0 0	12 0 0
400	5	Stone, Stafford	5 0 0	5 0 0	6 0 0
220	10	Stoney Stratford	10 0 0	4 10 0	9 0 0
		Stourbridge, £5000			
150	20	*Stratford-on-Avon*	20 0 0	8 0 0	34 0 0
150	5	Do., new shares	5 0 0	8 0 0	8 10 0
		Stroud			
169	10	Swaffham	10 0 0	5 0 0	7 0 0
		Swansea £9000			
261	20	Sudbury	20 0 0	5 0 0	20 0 0
18120	5	*Sunderland*	5 0 0	7 10 0	7¼ to 7⅜
1000	5	Do., new shares	5 0 0	7 10 0	
200	10	Sutton Coldfield, (Limited)	10 0 0		10 0 0
		Sutton, Surrey			
350	10	Sutton-in-Ashfield	10 0 0	7 10 0	12 10 0
		Sutton Southcoates & Drypool, Hull	20 0 0		23 to 24
	200	10	Swineshead (Lim.)	10 0 0	5 0 0	10 5 0
		Swindon			
2800	5	*Taunton*	5 0 0	6 0 0	6 0 0
2800	1¼	Do., new shares	1 10 0	6 0 0	
276	5	Tadcaster	5 0 0	5 0 0	3 0 0
		Tamworth			
		Tavistock			
200	5	Tenbury Union	5 0 0	5 0 0	5¼ to 6
		Tenby			
150	10	Tenterden	10 0 0	4 0 0	8 0 0
		Tetbury, Gloster			
		Tewkesbury			
200	10	Thame	10 0 0	5 0 0	10 0 0
250	10	Thetford	10 0 0	6 0 0	10 to 11
150	10	Thornbury (Lim.)	10 0 0	4 0 0	
80	1	Do., new shares	1 0 0	4 0 0	
356	5	Thorne	5 0 0		4 0 0
160	10	Thrapston (Lim.)	10 0 0	5 0 0	10 0 0
1885	5	Todmorden (Lim.)	5 0 0	10 0 0	8 to 9
600	2½	Topsham (Lim.)	2 10 0	5 0 0	
		Torpoint (Lim.)			
		Torquay			
		Torrington, Devon			
		Totnes			
		Totnes Consumers'			
4000	5	*Tottenham & Edmonton*	3 15 0	8 0 0	4 0 0
150	10	Towcester	10 0 0	5 0 0	10 0 0
		Town-Malling			
275	10	Tring	10 0 0	5 0 0	10 0 0
		Trowbridge (*see* Brit. Prov.)			
320	25	Truro	25 0 0	7 0 0	
		Tunbridge			
		Tunbridge Wells			
160	10	Tuxford	10 0 0	5 0 0	12 0 0
600	5	Tyldesley (Lim.)	5 0 0	7 10 0	7 0 0
		Ulverston			
		Uppingham			
240	5	Upton-on-Severn	5 0 0	5 0 0	5 0 0
310	5	Usk (Limited)	5 0 0	7 0 0	6 0 0
250	10	Uttoxeter	10 0 0	5 0 0	11 to 12½
		Uxbridge			
586	10	Ditto & Hillingdon Consumers'	10 0 0		
		Ventnor			
160	10	Wainfleet (Lim.)	10 0 0		8 0 0
1000	25	*Wakefield*	25 0 0	10 0 0	40 0 0
3660	5	Do.,	5 0 0	10 0 0	8 0 0
1732	5	Do., new shares	5 0 0	7 10 0	
300	10	Wallingford	10 0 0	5 0 0	8 0 0
200	10	Wantage	9 0 0	5 0 0	10 10 0
900	20	*Warrington*	20 0 0	8 15 0	
900	20	Do., new shares	13 0 0	8 15 0	
100	10	Wareham	10 0 0	3 10 0	8 0 0
2000	1	Warkworth and Amble	1 0 0	3 10 0	
160	25	Warminster	25 0 0	6 0 0	28 0 0
		Warth			
		Warwick £15,000		6 0 0	
		Watford			
400	10	Weedon (Limited)	10 0 0	8 10 0	15 0 0
400	3	Do., new shares	1 10 0	8 10 0	2 5 0
111	25	Welchpool, Montgomeryshire	25 0 0	5 0 0	25 0 0
		Wellingborough			
300	10	Wellington, Salop	10 0 0	7 10 0	12 0 0
		Wellington, Somersetshire			
160	25	*Wells*, Somersetshire	5 0 0	10 0 0	
160	10	Westbury	10 0 0		
		West Cowes			
225	10	Westerham (Lim.)	10 0 0	5 0 0	11 0 0
454	5	West Malling	5 0 0		3 4 0
400	20	*Weston-super-Mare*	20 0 0	6 10 0	
200	5	Wetherby	5 0 0		1 10 0
2000	10	*Weymouth*			
2300	1	Whitchurch, Hants (Limited)	0 10 0	2 10 0	
400	25	Whitehaven	25 0 0	2 0 0	14½ to 15
		Whitehaven New			
		Whitstable			
250	10	Whittlesea	10 0 0	5 0 0	11 0 0
1216	10	*Wigan*	10 0 0	10 0 0	22 0 0
		Wigton, Cumberland			
1020	5	*Willenhall*, A shares	5 0 0		
1020	54*s.*	Do., B shares	2 14 0	5 0 0	
		Do., new shares			
		Wilton			
240	10	Wimborne Minster	10 0 0		
600	10	Wimbledon	8 0 0		8 0 0
130	10	Wincanton	10 0 0	7 0 0	
380	50	Winchester	50 0 0	5 0 0	50 0 0
1000	20	Windsor (Limited)	20 0 0	7 10 0	25 0 0
141	10	Winslow	10 0 0	6 0 0	10 0 0
120	10	Winterton (Lim.)	10 0 0	5 0 0	
120	5	Do., new shares	5 0 0	5 0 0	
200	10	Wirksworth	10 0 0	5 0 0	10 0 0
		Wisbeach			
		Witham			
		Witney			
400	5	Wivelliscombe (Ld.)	5 0 0	6 0 0	5 5 0
200	10	Woburn	10 0 0	5 0 0	11 0 0
210	10	Wokingham	10 0 0	5 0 0	
4448	10	*Wolverhampton*	10 0 0	10 0 0	19 10 0
4448	10	Do., new shares	6 0 0	10 0 0	13 7 6
		Woohouses			
660	2½	Woodstock	2 10 0	5 0 0	
200	7	Wooler	7 0 0		
270	12	Wotton-un.-Edge	12 0 0	4 0 0	7 0 0
2400	10	*Worcester*	10 0 0	7 0 0	14 0 0
550	10	Woodbridge (Lim.)	10 0 0		
600	10	*Worksop*	10 0 0	5 0 0	
600	5	Do., new shares	5 0 0	5 0 0	
		Worthing			
600	5	Wrexham, A shares	5 0 0	7 10 0	5 0 0
600	5	Do., B shares	5 0 0	5 0 0	5 0 0
600	5	Do., C shares	3 10 0	5 0 0	3 10 0
		Woolwich Consumers			
		Woolwich Equitable			
		Wye, Kent			
		Wymondham			
795	20	Yarmouth	20 0 0	5 0 0	17 to 18
1675	4	Yeadon, nr. Leeds	4 0 0	6 5 0	4 5 0
140	30	Yeovil	30 0 0	6 0 0	30 0 0
140	10	Do., new shares	10 0 0	6 0 0	10 0 0
12000	5	*York United*	5 0 0	8 0 0	9 0 0
3000	5	Do., new shares	1 0 0	8 0 0	3 0 0

SCOTLAND.

No. of Shares issued.	Amount per Share.	Name of Company.	Amount paid up per Share.	Div. per Cent. per Annum.	Price per Share.
	£		£ s d	£ s d	£ s d
26000	2½	Aberdeen	2 10 0	10 0 0	5 1 0
500	10	Airdrie	10 0 0	9 0 0	14 10 0
		Alloa			
600	5	Annan	5 0 0	5 0 0	5 0 0
1600	1	Anstruther & Celardyke	1 0 0	8 0 0	1 6 0
100	20	Ardrossan	20 0 0	5 0 0	20 0 0
825	20	Arbroath	20 0 0	7 10 0	31 0 0
658	1	Auchinleck	1 0 0		
381	5	Auchterarder	5 0 0	7 10 0	7 10 0
750	2	Auchtermuchty	2 0 0	6 0 0	2 10 0
2666	5	Ayr	5 0 0	6 0 0	6 0 0
3000	2	Ayr & Newton Consumers	2 0 0	6 0 0	2 0 0
300	10	Banff	10 0 0	6 0 0	11 0 0
		Barrhead			
		Bathgate			
		Beith			
976	1	Bervie	1 0 0	5 0 0	
		Biggar			
739	5	Blairgowrie	5 0 0	8 0 0	7 0 0
		Borrowstowness			
540	5	Brechin	5 0 0	9 0 0	9 15 0
		Bridge of Allan			
2272	2	Broughty Ferry	2 0 0	7 10 0	2 7 6
		Campbelton			
250	4	Carluke, Lanark	4 0 0	7 10 0	4 0 0
		Clackmannan			
1666	3	Coatbridge	3 0 0	10 0 0	4 5 0
200	5	Coldstream	5 0 0	6 0 0	5 0 0
		Collinsburgh			
1000	1	Comrie	1 14 8	4 10 0	1 14 8
2744	1	Crieff	1 0 0	10 0 0	1 15 0
1200	1	Crail, Fife	1 0 0	5 0 0	1 0 0
600	1	Cullen	1 0 0	5 0 0	0 15 0
280	2½	Cumbernauld	2 10 0	5 0 0	2 10 0
200	5	Cumnock	5 0 0	6 0 0	6 0 0
600	5	Cupar Angus	5 0 0	7 0 0	6 10 0
250	10	Cupar Fife	10 0 0	10 0 0	18 10 0
300	10	Dalkeith	10 0 0	7 10 0	20 10 0
750	2	Denny	2 0 0	6 5 0	2 5 0
	5	Dornoch			
500	1	Douglas	1 0 0	6 0 0	1 2 0
		Dufftown			
		Dumbarton			
400	20	Dumfries	14 0 0	7 2 10	14 10 0
391	5	Dunbar	5 0 0	6 0 0	5 10 0
		Dunblane			
1250	25	*Dundee*	23 15 0	8 15 9	50 0 0
8000	5	*Dundee, New*	5 0 0	4 10 0	5 5 0
860	10	Dunfermline	10 0 0	7 10 0	16 10 0
		Dunkeld			
1750	2	Dunoon	2 0 0	6 0 0	2 3 0
		Dunse			
250	5	Dysart	5 0 0	7 10 0	6 10 0
2327	1	East Wemyss	1 0 0	6 0 0	1 2 0
6000	25	*Edinburgh*	25 0 0	10 0 0	54 0 0
640	25	*Edinburgh & Leith*	25 0 0	10 0 0	53 0 0
621	12	Elgin	12 0 0	6 0 0	13 0 0
		Elie			
	14	Falkirk	14 0 0	7 0 0	14 0 0
		Falkirk, New			
632	2	Falkland	2 0 0	5 0 0	2 0 0
2000	1	Ferry Port on Craig	1 0 0	6 5 0	1 3 0
581	1	Fochabers	1 0 0	5 0 0	1 2 0
1440	5	Forfar	5 0 0	7 10 0	7 12 6
360	5	Do., new shares	2 10 0	7 10 0	6 10 0
		Fort William			
2000	1	Fraserburgh	0 16 0	5 0 0	0 18 0
500	5	Galashiels	5 0 0	10 0 0	9 10 0
		Gatehouse, near Fleet			
900	2½	Girvan	2 10 0	6 0 0	2 10 0
5200	25	*Glasgow*	25 0 0	10 0 0	47 10 0
3200	6⅔	Do.	6 5 0	10 0 0	11 17 6
15000	10	*Glasgow City & Suburban*	10 0 0	10 0 0	19 7 6
		Grangemouth			
		Grahamston			
		Haddington			
		Hamilton			
	5	*Hamilton, New*	5 0 0	4 10 0	6 0 0
440	5	Hawick	5 0 0	7 10 0	7 10 0
300	5	Helensburgh	5 0 0	7 10 0	7 10 0
1312	1	Huntly	1 0 0	7 10 0	1 5 0
250	5	Inverary	5 0 0	10 0 0	6 12 6
425	1	Inverkeithing	1 0 0	5 0 0	1 0 0
1200	10	*Inverness Gas & Water*	10 0 0	7 0 0	14 0 0
2400	5	Do., new shares	1 5 0	7 0 0	2 0 0

No. of Shares issued.	Amount per Share.	Name of Company.	Amount paid up per Share.	Div. per Cent. per Annum.	Price per Share.
	£		£ s d	£ s d	£ s d
10		Irvine	10 0 0	10 0 0	14 0 0
	2½	Do.	2 10 0	10 0 0	3 12 6
300	5	Jedburgh	5 0 0	7 10 0	7 10 0
		Johnstone, Paisley			
		Keith			
600	5	Kelso	5 0 0	10 0 0	10 10 0
600	25	Kilmarnock	25 0 0	7 10 0	30 0 0
600	25	Do., new shares	7 10 0	7 10 0	
334	5	Kincardine	5 0 0	5 0 0	4 10 0
		Kinghorn			
		Kingskettle, Fife			
		Kinross			
1200	5	Kircaldy	5 0 0	10 0 0	10 10 0
320	5	Kircudbright	5 0 0	5 0 0	5 0 0
997	3	Kirkintulloch, nr. Glasgow	3 0 0	6 13 4	3 7 0
		Kirkwall			
		Kirriemuir			
		Lanark			
		Largo, near Leven			
280	8	Largs	8 0 0	7 10 0	8 10 0
1309	1	Lasswade, near Edinburgh	1 0 0		
177	5	Lauder	5 0 0	5 0 0	5 0 0
2000	1	Leslie, Fife	1 0 0	7 10 0	1 5 0
618	1	Lesmahago	1 0 0	6 0 0	1 0 0
1800	1	Leven	1 0 0	7 10 0	23s. to 25s.
100	10	Linlithgow	10 0 0	10 0 0	19 0 0
		Linton			
		Lochee, n. Dundee			
434	5	Lochgilphead (Ld.)	5 0 0	7 0 0	5 10 0
380	5	Lochwinnoch, nr. Paisley	5 0 0	3 10 0	4 0 0
1200	1	Markinch, Paisley	1 0 0	8 0 0	1 5 0
282	3	Mauchline	3 0 0	5 0 0	3 0 0
		Maxwell Town, n. Dumfries			
423	5	Maybole, Ayrshire	5 0 0	4 10 0	5 0 0
		Maryhill, n. Glasgow			
373	2	Melrose	2 0 0	7 10 0	2 10 0
718	2	Mid & East Calder	2 0 0		2 0 0
200	5	Moffat	5 0 0	5 0 0	
120	2½	Do.	2 10 0	5 0 0	
400	20	Montrose	20 0 0	10 0 0	35 0 0
800	5	Musselburgh	5 0 0	10 0 0	9 10 0
618	1	Nairn	1 0 0	5 0 0	1 0 0
		Neilston, n. Glasgow			
1200	1	Newmilns, near Kilmarnock	1 0 0	7 10 0	1 2 0
300	5	Newburgh, Fife	5 0 0	8 0 0	7 0 0
300	1	Do., new shares	1 0 0	8 0 0	
		Newton-on-Ayre			
107	14½	Newton Stewart	14 10 0	5 0 0	14 10 0
300	5	N. Berwick, N.B.	5 0 0	5 0 0	7 10 0
		N. Queensferry			
245	5	Oban	5 0 0	7 10 0	5 7 6
1000	5	Peebles	5 0 0	6 0 0	5 0 0
560	2½	Do.	2 10 0	6 0 0	2 10 0
1000	25	Perth	25 0 0	6 10 0	30 0 0
	5	Perth, New	5 0 0	2 10 0	4 5 6
		Peterhead			
2000	1	Pettenween	1 0 0	6 0 0	1 1 0
2416	1	Pollokshaws, near Glasgow	1 0 0	7 10 0	1 5 0
		Port Glasgow			
		Portobello, near Edinburgh			
200	5	Prestonpans	5 0 0	6 0 0	
1500	1½	Rutherglen	1 6 8	5 0 0	1 6 8
400	5	Saltcoats	5 0 0	7 10 0	6 0 0
936	1	Sanquhar	1 0 0	5 0 0	0 15 0
30	1	Do., preference	1 0 0	5 0 0	
		Selkirk			
		S. Queensferry			
250	12	St. Andrew's	12 0 0	6 5 0	16 0 0
193	12	Do., new	12 0 0	6 5 0	16 0 0
200	5	Stewarton	5 0 0	10 0 0	6 to 6½
7450	2	Stirling	2 0 0	8 0 0	3 12 0
2500	1	Stonehaven	1 0 0	6 5 0	1 5 0
1110	1	Stonehouse, Lanarkshire	1 0 0	7 10 0	13s. to 15s.
600	2½	Stornoway	2 10 0		2 10 0
500	5	Stranraer	5 0 0	7 10 0	6 0 0
588	2	Strathaven	2 0 0	8 0 0	3 0 0
643	2½	Thurso	2 10 0		2 10 0
		Tillicoultry, near Alloa			
800	1	Tranent	1 0 0	5 0 0	1 0 0
		Troon			
2051	1	Wemyss & Buckhaven	1 0 0	6 0 0	1 0 0
		Wick			
665	5	Wigtown	5 0 0		
		IRELAND.			
		Ardee			
300	10	Armagh	10 0 0	10 0 0	19 to 20
1800	1	Antrim (Limited)	1 0 0		1 0 0
500	5	Athy (Limited)	4 0 0	6 0 0	5 0 0
600	5	Ballymena	5 0 0	15 0 0	5 10 0
184	10	Ballymoney	10 0 0	5 0 0	10 0 0
220	5	Ballynahinch (Ld.)	5 0 0	5 0 0	5 0 0
		Ballycastle			
107	14½	Newton Stewart	14 10 0	5 0 0	14 10 0
300	5	N. Berwick, N.B.	5 0 0	5 0 0	7 10 0
		N. Queensferry			
245	5	Oban	5 0 0	7 10 0	5 7 6
1000	5	Peebles	5 0 0	6 0 0	5 0 0
560	2½	Do.	2 10 0	6 0 0	2 10 0
1000	25	Perth	25 0 0	6 10 0	30 0 0
	5	Perth, New	5 0 0	2 10 0	4 5 6
		Peterhead			
2000	1	Pettenween	1 0 0	6 0 0	1 1 0
2416	1	Pollokshaws, near Glasgow	1 0 0	7 10 0	1 5 0
		Port Glasgow			
		Portobello, near Edinburgh			
200	5	Prestonpans	5 0 0	6 0 0	
1500	1½	Rutherglen	1 6 8	5 0 0	1 6 8
400	5	Saltcoats	5 0 0	7 10 0	6 0 0
936	1	Sanquhar	1 0 0	5 0 0	0 15 0
30	1	Do., preference	1 0 0	5 0 0	
		Selkirk			
		S. Queensferry			
250	12	St. Andrew's	12 0 0	6 5 0	16 0 0
193	12	Do., new	12 0 0	6 5 0	16 0 0
200	5	Stewarton	5 0 0	10 0 0	6 to 6½
7450	2	Stirling	2 0 0	8 0 0	3 12 0
2500	1	Stonehaven	1 0 0	6 5 0	1 5 0
1110	1	Stonehouse, Lanarkshire	1 0 0	7 10 0	13s. to 15s.
600	2½	Stornoway	2 10 0		2 10 0
500	5	Stranraer	5 0 0	7 10 0	6 0 0
588	2	Strathaven	2 0 0	8 0 0	3 0 0
643	2½	Thurso	2 10 0		2 10 0
		Tillicoultry, near Alloa			
800	1	Tranent	1 0 0	5 0 0	1 0 0
		Troon			
2051	1	Wemyss & Buckhaven	1 0 0	6 0 0	1 0 0
		Wick			
665	5	Wigtown	5 0 0		
		IRELAND.			
		Ardee			
300	10	Armagh	10 0 0	10 0 0	19 to 20
1800	1	Antrim (Limited)	1 0 0		1 0 0
500	5	Athy (Limited)	4 0 0	6 0 0	5 0 0
600	5	Ballymena	5 0 0	15 0 0	5 10 0
184	10	Ballymoney	10 0 0	5 0 0	10 0 0
220	5	Ballynahinch (Ld.)	5 0 0	5 0 0	5 0 0
		Ballycastle			
500	5	Omagh	5 0 0	7 10 0	6 0 0
125	20	Portadown	20 0 0	5 0 0	21 0 0
		Portaferry			
500	10	Queenstown	10 0 0	5 0 0	
900	10	Sligo	10 0 0	6 0 0	10 0 0
1600	10	Waterford	10 0 0	6 0 0	12 0 0
		Wicklow			
	£		£ s d	£ s d	£ s d
700	80	Bangor, Down	80 0 0	10 0 0	100 0 0
	20	*Belfast*	20 0 0	10 0 0	25 0 0
1055	5	Do., new shares	5 0 0	5 0 0	5 0 0
600	5	Carlow	5 0 0	8 0 0	6 5 0
197	10	Carrickfergus (Ld.)	10 0 0	5 0 0	10 0 0
228	10	Carrickmacross (L.)	10 0 0	5 0 0	10 0 0
400		Castleblaney (Ld.)	10 0 0	5 0 0	10 0 0
		Cavan (Limited)	5 0 0		
500	5	Cookstown	5 0 0	5 0 0	
1300	5	Clonmel Consumers	5 0 0	5 0 0	5 0 0
240	5	Comber (Limited)	5 0 0	5 0 0	5 0 0
		Coote Hill			
8000	5	Cork Consumers (Limited)	5 0 0	6 10 0	7 0 0
		Do., new shares	1 5 0	6 10 0	2 0 0
4000	5	Drogheda	11 0 0	7 0 0	14 10 0
608	11	Do., new shares	5 10 0	7 0 0	7 5 0
420	5½	*Dublin Hibernian* (see Untd. Gen.)			
		Dublin Alliance	7 0 0	7 10 0	8¼ to 8½
19000	10	Dundalk (Limited)	25 0 0	5 0 0	25 0 0
220	25	Dungannon	10 0 0	7 10 0	12 10 0
200	10	*Downpatrick*	5 0 0	4 0 0	4 0 0
871	5	Ennis (Limited)	10 0 0		11 0 0
249	10	Galway	25 0 0	10 0 0	35 0 0
240	25	Kendy			
		Kilkenny (Limited)	10 0 0	7 0 0	11 0 0
400	10	Kilrush			
		Larne (Limited)	10 0 0	5 0 0	10 0 0
210	10	Letterkenny (Ld.)	10 0 0		12 10 0
150	10	Limerick	5 0 0		
1725	5	Lisburn (Limited)	8 0 0	10 0 0	10 0 0
500	10	Lismore	5 0 0	3 0 0	
300	5	Do., preference	3 0 0	5 0 0	
100	5	Londonderry	15 0 0	6 13 4	21 0 0
600	15	Longford			
		Lurgan	7 0 0	6 0 0	7 0 0
520	10	Mallow			
		Maryborough (Ld.)	0 5 0		0 5 0
2191	1	Monaghan			
		Navan			
		Nenagh			
		Newtownards	5 0 0	7 0 0	6 5 0
450	5	Newtownlimavady	10 0 0	5 0 0	10 0 0
200	10	Newry Consumers (Limited)	5 0 0		7½ to 7¾
1000	5	Omagh	5 0 0	7 10 0	6 0 0
500	5	Portadown	20 0 0	5 0 0	21 0 0
125	20	Portaferry			
		Queenstown	10 0 0	5 0 0	
500	10	Sligo	10 0 0	6 0 0	10 0 0
900	10	Waterford	10 0 0	6 0 0	12 0 0
1600	10	Wicklow			

The Gas-Works in the undermentioned towns belong to private individuals. Those marked * by the purchase of the shares in extinct companies :—

Abergavenny. Alford. Billericay. Blaydon, near Newcastle. Bodmin. Boroughbridge. Bridgenorth. Broadbottom. Brough. Burntisland. Bungay. Chard. Chapel-en-le-Frith. Clare. Crewe. Crewkerne. Dingwall. Ellesmere. Enniscorthy. Ely. Falmouth. Farsley. Fermoy. Ferry Hill. Fleetwood. Goole. Hadleigh. Halstead. Harleston. Harrow on-the-Hill. Hayle. Holbeach. Holt. Hunmanby. Kings Langley. Knutsford. Oswestry. Parsonstown. Penryn. Lynn. Market Deeping. Market Raisen. Newport* (I.W.). Newport (I.W.), New. New Ross. Oakham*. Sittingbourne. Spalding. Stokesley. Stowmarket. Peterborough. Pontypool. Rhyl. St. Neot's*. Sidmouth. Swaffham. Tipperary. Tiverton*. Waltham Abbey. Ware. Wem. Wexford. Whitchurch (Salop). Whitby. Thirsk.

The Gas-Works belong to Municipal Corporations, or to Commissioners acting under special Acts of Parliament, in the following towns :—

Athlone. Ballinasloe. Beverley. Birkenhead. Blackpool. Burnley. Bury (Lanc.). Carlisle. Cashel. Coleraine. Dalton. Darlington. Devizes. Doncaster. Enniskillen. Great Malvern. Greenock. Halifax. Haverfordwest. Keighly. Kells (Meath). Knaresborough. Leek. Limerick Corporation Works. Lytham (Lanc.). Manchester. Middlesborough. Milton (Kent). Newton (Lanc.). Oldham. Paisley. Renfrew. Richmond (York). Rochdale. Ross. Rothesay. Salford. Southport. Stockton-on-Tees. Stockport. Strabane. Teignmouth. Tralee. Trim (Meath). Wallasey. Walsall. Wells (Norfolk). Workington. Youghall.

Price Current.

CASTINGS, per Ton.

Average Weight of Cast-Iron Gas-Pipes, per Yard.

1¼ in.	2 in.	2½ in.	3 in.	4 in.	5 in.	6 in.	7 in.	8 in.	9 in.	10 in.	12 in.
16	21	28	33	51	70	89	107	126	149	177	208 lbs.

Retail Prices are 5 to 10 per cent. higher.	London.	Glasgow.	Newcastle.	Wales.	Yorkshire, Derbyshire, and Staffordsh.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Pig Iron, No. 1	4 0 0	2 17 6	3 5 0	3 5 0	3 10 0
1¼ and 2 inches Socket-Pipes	7 0 0	6 0 0	6 5 0	6 10 0	6 15 0
2½ and 3 ,, ,,	6 10 0	5 10 0	5 15 0	6 0 0	6 5 0
4 and 5 ,, ,,	6 0 0	5 0 0	5 5 0	5 10 0	5 15 0
6 in. and upwards ,,	5 15 0	4 15 0	5 0 0	5 5 0	5 10 0
Retorts, 1st fusion, hot blast	5 10 0	4 10 0	4 15 0	5 0 0	5 5 0
,, 2nd ,, cold ,,	6 10 0	5 5 0	5 10 0	6 0 0	6 5 0
Tank Plates, ¼ thick and above	6 0 0	5 0 0	5 5 0	5 10 0	5 10 0

WROUGHT-IRON TUBING,

Subject to 40 per cent. Discount.

	2 in.	1½ in.	1¼ in.	1 in.	¾ in.	½ in.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Patent Welded Tubes, from 2 to 12 ft., perft.	1 8	1 0	0 10	0 7	0 5	0 4½
,, ,, ,, 6 in. to 18 in., each	3 0	2 0	1 9	1 3	1 0	0 9
Connecting-Pieces, or Long Screws	3 6	2 3	2 0	1 6	1 2	0 11
Bends, Springs, and Elbows—wrought iron	3 9	2 3	1 9	1 0	0 10	0 8
Tees, wrought or cast	4 0	2 6	2 0	1 6	1 1	0 10
Crosses, wrought or cast	4 6	3 0	2 6	2 0	1 6	1 2
Iron Cocks	17 6	9 6	7 6	4 6	3 3	2 6
,, with brass plug	28 0	16 0	13 0	7 0	5 6	4 6
Diminishing Sockets, Caps, Plugs, and Plain Sockets [Nipples	1 3	0 9	0 8	0 6	0 5	0 4
Syphons, 2 quart	1 0	0 8	0 7	0 5	0 4	0 3
	15 0	14 0	13 6	13 0	12 0	—

COALS, per Ton.

Newcastle.—Unscreened.	6s. 3d.
Whitwell Primrose	
Medomsley, Eighton Moor, and Burnhope	6 6
Pelaw	6 9
New Pelton, Peareth, South Pelaw, Washington Hutton, and South Peareth	7 0
Pelton	7 9
Ramsay's Newcastle Cannel	16 0

Scotch Cannel.	
Boghead, at Leith	45s. 0d.
Kirkness, best	23 0
Capeldrae, 1st quality	20 0
,, 2nd ,,	12 6
Lesmahago, at Glasgow	25 0
,, ,, Leith	27 6
Arniston	22 0
Wemyss	20 0
Knightswood	18 0
Pirnie	15 0

SUNDRIES.

Best Newcastle Fire-bricks	per 1000	50s. 0d.	
Cliff's Fire-bricks, at Wortley	per 1000	57 6	
Ingham's Fire-bricks, at Wortley	,,	55 0	
Fire-clay Retorts	per foot run,	5s. 6d. to	7 0
Tough Cake Copper ... per ton	£117	0s.	
English Pig Lead	,,	22 0	
Welch Bar Iron, in London	,,	6 15 0	
Tarred Rope Yarn			per cwt. 26s. 0d.
Foreign Spelter	per ton	£21	17 6
English Block Tin	,,	138	0 0
Banca	,,	140	0 0

FREIGHTS.

Coastwise—Newcastle.—Per Ton.	6s. 6d.
Chatham & Rochester	
Cork	10 6
Dover	8 0
Dublin	12 0
Exeter Quay	9 6
Folkestone	8 0
London (Pool)	6 6
Lowestoft & Yarmouth	5 0
Lynn	—
Portsmouth	7 9
Plymouth	10 3
Ramsgate	8 0
Whitstable	6 9
Weymouth	—

Foreign.—Per Keel.	
Boulogne and Calais	£8 5 0
Barcelona	24 0 0
Bordeaux	16 0 0
Cadiz	17 0 0
Copenhagen	—
Dieppe	10 15 0
Genoa	24 10 0
Hamburg	10 10 6
Havre	10 2 6
Leghorn	24 0 0
Lisbon	16 0 0
Rotterdam	—
Stettin	9 15 0
Trieste & Venice	£25 to 27 0 0

COUNTY CHAMBERS,
CORNHILL, LONDON, E.C.

MR. R. P. SPICE, of Richmond, respectfully announces that, for greater convenience, he has removed the business of his Office to the above address.

Plans, Specifications, and Estimates, prepared for the Erection or Improvement of Gas-Works.

Agent for the Purchase, Sale, or Leasing of Provincial Gas-Works.

The Green, Richmond, S.W., Jan. 2, 1860.

GAS, WATER, MINING, AND GENERAL ENGINEERING.

MR. PRESTON LUMB having changed his Offices to 16, NORTHUMBERLAND STREET, STRAND, W.C., feels it incumbent upon him to announce to his clients and others that he may be consulted (from 10 to 5) in every branch of Engineering. His twenty-five years' experience and success, *especially in the construction and leasing of Gas-Works*, has enabled him to increase his hitherto extensive and efficient staff, so that Boards of Directors may confidently rely upon his prompt attention. He has also the command of a large amount of Capital for Engineering enterprise.

London, 16, Northumberland Street,
Strand, W.C., Jan., 1860.

JOSEPH WILLCOCK
(late BARLOW and CO.),
Mechanical and Architectural Draftsman, Designer, Surveyor, and Lithographer to Gas Engineers and Gas Apparatus Manufacturers, formerly Superintending Engineer at the largest Gas Apparatus Manufactory on the Continent.

Patent and Designs Office, 89, Chancery Lane, LONDON, W.C.

CAUTION.
TO GAS-METER MANUFACTURERS AND OTHERS.

THE Undersigned hereby caution Meter Manufacturers and others against infringing the exclusive right of the Undersigned to the use of the Screw Adjustment for regulating the Height of the Overflow-Pipes in Wet Gas-Meters, as described in the Specification of the Letters Patent granted to Crosley and Goldsmith on the 19th of April, 1856; as well as against infringing any other portions of that or any other Patent of the said William Crosley; and

NOTICE is further given, that all Infringers of the said Inventions, or any portions of them, will be proceeded against. CROSLEY & CO.,
103, SOUTHWARK BRIDGE ROAD,
LONDON, Aug. 29, 1859.

WHITEHOUSE and CO., Boiler and GASHOLDER MAKERS,
GLOBE PATENT TUBE WORKS,
WEDNESBURY,
Beg to draw the attention of Engineers and Managers of Gas Works to the superior quality of the Article they manufacture, both in respect of the iron employed, and the perfect manner in which it is welded; in proof of which they can refer to the testimonials of the most eminent Gas Engineers, and the experience of the principal of the large Gas Companies of the kingdom.
Orders promptly executed.

PATENT FLEXIBLE GAS TUBING,
VULCANIZED INDIARUBBER HOSE-PIPES,
WASHERS, PACKING, &c.

JAMES LYNE HANCOCK begs to announce a considerable REDUCTION in PRICE of his PATENT VULCANIZED INDIARUBBER TUBING.

VULCANIZED INDIARUBBER AIR-TIGHT BAGS, any size, for Gas Mains, with flexible tubes attached, and fitted with stop-cocks complete.

Manufactory and Warehouse, No. 6, Goswell Road, LONDON (E.C.).

TO GAS & WATER COMPANIES, ENGINEERS AND FITTERS.

GARSIDE'S Registered Tube-Vice holds all sizes of Wrought-Iron and Brass Tubes with the greatest firmness and least possible pressure; consequently it is not so liable to split or damage the Tubes as the ordinary Vice, and considerably facilitates the Workman, who may do almost double the quantity of work. Also,

GARSIDE'S IMPROVED MAIN-DRILLING CLIPS, for Drilling Holes for Service-Pipes. With this instrument the perforation of Pipes for the attachment of smaller Tubes can be effected with great ease and precision. Likewise,

HEAP'S REGISTERED GAS TONGS, most highly approved of as vastly superior to those in present use. Stocks, Taps, and Dies, together with all tools connected with Gas Engineering.

For Drawings, Testimonials, and prices, apply to the Maker, S. GARSIDE, Stamford St., ASHTON-UNDER-LYNE.

THOMAS PHILLIPS,
55, SKINNER STREET, SNOW HILL,
Patentee and Manufacturer of all kinds of Cooking Apparatus, Baths, Conservatory Boilers, &c., for Gas. Gas Stoves from 16s.; Cooking Apparatus from £1. Every article warranted.

N.B.—Public and Private Establishments fitted by Gas or Hot Water.

TO GAS COMPANIES.

WANTED, by a young Man, aged 23, a Situation as MANAGER of a small Gas-Works. Would be willing to perform all the duties attendant on Manufacture and Distribution, can lay Main and Service Pipes, repair Apparatus, &c. &c. Can have good Testimonials for character and ability from the Company with whom he is now engaged.

Apply W. W., care of Mr. W. B. KING, 11, Bolt Court, Fleet Street, LONDON, E.C.

THE Oxford Gaslight and Coke Com-PANY are desirous to receive TENDERS for Erecting TWO DRY-LIME PURIFIERS, with Covers, Sieves, Girders, and Travelling Crab, &c. Drawings and Specification may be seen at the Company's Office after the 26th inst.

They have also for Sale a GASHOLDER, 25½ feet diameter and 16 feet deep; and the TANK belonging to it, 27 feet diameter and 16 feet deep, with Wheels, Chain and Balance-Weights and Guide-Rods, 5-inch Inlet and Outlet-Pipes and Slide-Valve.

TWO DRY-LIME PURIFIERS, with Covers, Sieves, and Crane complete.

ONE HYDRAULIC CENTRE-VALVE for 10-inch Connexions.

TEN 7-INCH VALVES, with racks and pinions.
TEN 6-INCH " " "
The whole in good order.

All particulars may be obtained of Mr. C. HENWAND, Gas Station, OXFORD.

WALTER MABON, Engineer,
ARDWICK IRON WORKS, FAIRFIELD STREET
MANCHESTER,
Manufacturer of

IRON TANKS for Gasholders, Railway Stations, &c.

GASHOLDERS.—Extensive premises at Gorton, solely for the manufacture of Gasholders, and other heavy Wrought-Iron Structures.

GAS APPARATUS.—W. M. has an extensive assortment of patterns for Purifiers from 4 feet to 15 feet square, also round ones from 4 feet to 10 feet diameter; Scrubbers, Condensers, Washers, Columns, Girders, and Tripod Patterns, suitable for Gasholders, from 10 feet to 150 feet diameter, either Single-lift or Telescope. Contractor for Gas Works of any Magnitude. Designs, Specifications, and Estimates furnished.

WROUGHT and CAST IRON ROOFS for Railway Stations, Gas Works, Warehouses, and Sheds, prepared for Slates or for Corrugated Iron.

IRON HOUSES, either for Dwellings, Manufactories, or Public Buildings.

PIPES and VALVES, for Gas and Water, from 2 inches to 48 inches bore.

METROPOLITAN BOARD OF WORKS.
MAIN DRAINAGE OF METROPOLIS.
MIDDLE-LEVEL SEWER.

TO Builders and Contractors ex-perienced in Tunnel Works. The Metropolitan Board of Works hereby give notice, that they will MEET in the Council Chamber, Guildhall, in the City of London, on FRIDAY, the 17th day of February next, at TWELVE o'clock at Noon precisely, and will then be prepared to open TENDERS by parties who may be willing to CONTRACT for the CONSTRUCTION of MAIN BRICK SEWERS, 12 miles 1280 feet in length, or thereabouts (33,862 feet of this length being in tunnel), and for the execution of other works in connexion therewith, to extend from a point between the Northern High-Level Sewer, East of Sir George Duckett's Canal and the Western Arm of the Counter's Creek Main Sewer, near Kensal Green, in the county of Middlesex.

Parties desirous of submitting Tenders may, upon payment of £3, obtain Plans, Sections, Specification, Form of Tender, and other particulars, on application to Mr. J. W. BAZALGETTE, Engineer of the Board, at the Office of the Board, between the hours of Nine a.m. and Four p.m.

Tenders, addressed to the Metropolitan Board of Works, must be delivered at the Office of the Board, No 1, Greek Street, SOHO, before Four o'clock p.m., on Thursday, the 16th day of February next, and no Tender will be received after that hour.

The Board do not bind themselves to accept the lowest or any Tender, and the party whose Tender shall be accepted will be required to provide two approved sureties for the due performance of the works.

JOHN POLLARD, Clerk of the Board.
No. 1, Greek Street, Soho, Jan. 9, 1860.

ROBERT MACLAREN and CO.,
EGLINTON FOUNDRY, GLASGOW,
Manufacturers of all sizes of Cast-Iron Main Pipes, by an improved Patent. General Ironfounders, Gas Engineers, and Wrought-Iron Tube Makers.

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DEPÔT for STOURBRIDGE AND NEWCASTLE FIRE-BRICKS, LUMPS, TILES, and CLAY, and every Article suitable for

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CAST-IRON Retorts, Socket Pipes, with Syphons and all requisite Connexions, Lamp Columns, Wrought Iron Tubing, Valves, Street Lamps, Sight Holes, Furnace Doors, Ash Pans, Charging and Coke Shovels, Iron Pails and Coke Barrows, Cross Bars, Fire Pots, Pumps, Iron Borings.

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supplied either with or without Steam-Engines and Boilers.

FOUR-WAY DIAPHRAGM VALVES,
one of which answers the purpose of THREE ordinary Valves, as applied to Purifiers, or in shutting off and passing Station-Meters, Governors, or other apparatus, while the Connecting-Pipes are also much simplified.

RETORT SETTINGS,
designed to be heated by Tar alone, and with a total absence of Smoke.

Illustrated circulars, giving references and every information, may be obtained on application as above.

FOR SALE, a Small Direct-Action STEAM-ENGINE, in good condition, 6-inch Cylinder, 12-inch stroke.

For particulars apply to the MANAGER, Worcester Gas-Works.

ADDISON POTTER,
WILLINGTON QUAY,
NEAR NEWCASTLE-UPON-TYNE,
Manufacturer of Clay Retorts, Fire Bricks, and every description of Fire Clay Goods.

TO Mr. BENJAMIN WHITEHOUSE,
GASHOLDER MAKER,
WESTBROMWICH, NEAR BIRMINGHAM.

Sir,—I feel great pleasure in expressing my satisfaction at the manner in which you discharged your duties as CONTRACTOR for the TELESCOPIC GASHOLDER, 150 feet diameter and 60 feet deep, erected at this Company's Nine Elm Station in 1857. From that period to the present I have closely watched its working, and have never found the least defect either in workmanship or material.

During the recent heavy gales the Gasholder, although containing upwards of 1,000,000 cubic feet of Gas, showed no perceptible indications of its influence, but worked as freely and easily as usual.

RICHARD JONES.
Engineer to the London Gaslight Company.
Vauxhall, London, Nov. 9, 1859.

WILLIAM STEPHENSON & SONS,
THROCKLEY,
NEWCASTLE-ON-TYNE,
MANUFACTURERS OF EVERY DESCRIPTION OF
FIRE BRICKS, CLAY RETORTS, LUMPS, TILES,
&c. &c.

LONDON OFFICES:
76, KING WILLIAM STREET, CITY.

A large stock of Fire-Clay Goods always on hand in London, at the lowest wharf prices, at Messrs. CHRISTIE & Co.'s Wharf, 64, Bankside, SOUTHWARK.

LORD REDESDALE'S ACT.

GAS-METERS.

D. HULETT & CO.

Have always made their Meters with the Low Spouts; consequently no alteration is required.

55 and 56, HIGH HOLBORN, LONDON.

CROSLEY & GOLDSMITH'S

PATENT SELF-ADJUSTING & COMPENSATING GAS-METERS

CANNOT BE OVER OR UNDERCHARGED WITH WATER,

and they consequently register the quantity of Gas consumed with greater accuracy than Meters in which the Water-Line is variable.

MANUFACTURED BY

CROSLEY & CO.,

GAS-METER MANUFACTURERS,

103, SOUTHWARK BRIDGE ROAD, LONDON.

N.B. The Patent Self-Adjusting and Compensating Apparatus may be applied to the ordinary Meter.

Manufacturers of LOWE'S PATENT MOTIVE-POWER METER, for situations where there is an inadequacy of pressure to supply the special requirements of certain consumers in low grounds during the day or night.

Also, Manufacturers of EXPERIMENT METERS, GASHOLDERS, GOVERNORS, MINUTE-CLOCKS, PHOTOMETERS, &c. &c., similar to those used by Mr. King, of Liverpool.

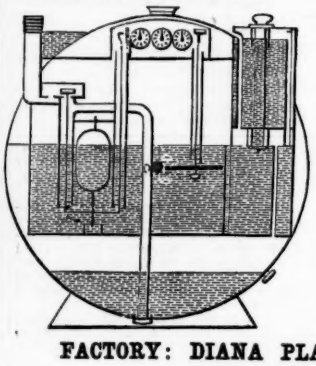
C. and Co. are the only house in the trade which has for years manufactured Meters according to the standard measure set forth in the 2nd Section of the "Sale of Gas Act," and which also comply with the rules laid down in the Section for testing meters. Purchasers of C. and Co.'s Meters may therefore be secured against any additional expenses being incurred in order to adapt their Meters to the requirements of the new Act.

ESSON'S PATENT

COMPENSATING GAS-METER

Is guaranteed correct within the meaning of the "Sale of Gas Act." Manufactured only by WILLIAM COWAN, Buccleuch Street Works, EDINBURGH; and St. Mary's Gate, MANCHESTER.—Established 1827.

PATENT WET METER.



N. DEFRIES,

CONSULTING GAS ENGINEER,

Inventor and Patentee

OF

WET GAS-METERS,

WITH SELF-ADJUSTING WATER-LINE;

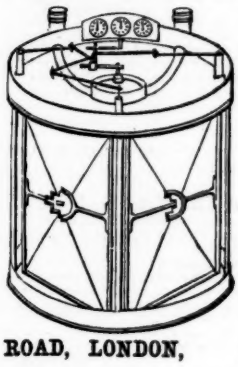
DRY METERS,

GAS-HEATING BATHS, OVENS, STOVES,

GAS FIRES with INDESTRUCTIBLE FUEL,

&c., &c.

PATENT DRY METER.



FACTORY: DIANA PLACE, FITZROY SQUARE. OFFICE: 406, EUSTON ROAD, LONDON,

Eight Doors from Factory.

Attempts having been made to construct Self-Supplying Apparatus to Wet Gas-Meters upon the Bird Fountain principle,—which, although unerring to supply water in the open atmosphere, has not wholly succeeded so as to be relied upon when enclosed in a Gas-tight Meter Case,—N. DEFRIES begs leave most respectfully to acquaint Gas Companies, and the Public in general, that he has constructed his PATENT WET GAS-METER upon a method entirely different, being founded on the well-known principle of the self-acting supply of the Oil Lamp, which has never been applied for the adjustment of the Meter Water-Line before, and which, by the admission of external air to a chamber sealed from Gas, will never fail to faithfully perform its required function. They are of the very best materials and workmanship, will stand more pressure than is required as the test for soundness by the New Act, are guaranteed to prevent surreptitious burning without detection, and will be kept in repair free of charge for seven years.

N. DEFRIES'S CELEBRATED DRY METERS,

of which more than 80,000 are in use in Palaces, Churches, Chapels, Royal Dockyards, Club Houses, Public Offices, and other Buildings throughout the Empire and Continent, which have done so much in checking surreptitious burning, and simplified the fitting up of Gas.

To remove any doubt of accuracy of measurement his Meter for 1500 lights, in use upwards of ten years at the Royal Italian Opera, until that Building was destroyed by Fire, was long afterwards dug out of the burnt ruins, then tested by the Chartered Gas Company in the presence of George Lowe, Esq., F.R.S., and other Chief Officers, and found inflexibly correct. Also, on the 9th of June, 1858, at the Western Gas-Works, his Meter for 150 lights, after considerable use, was doubted, and subjected to the most variable tests—from the full lighting to a single Jet—and in each case, as in other instances, accuracy was finely indicated.

As to durability, his two large Meters at the Thames Tunnel have been in use night and day for upwards of twelve years—one continuation of dark hours—subjected to the wear and tear of seventy-five years as compared with the ordinary business hours of using Gas above ground.

LORD REDESDALE'S SALE OF GAS BILL.

All Meters constructed by N. DEFRIES are guaranteed to pass the Provisions of the Standard.

No alteration has been necessary in the Meters he continues to supply to the Chartered, Imperial, City of London, Equitable, and other large Companies, his accustomed range of 1 per cent. over and under meeting all the desired requirements; whereas, by the New Act, a greater departure from accuracy—viz., 2 per cent. fast to 3 per cent. slow—is permitted.

JAMES OAKES and CO.,
ALFRETON IRON WORKS, DERBYSHIRE,
AND
WENLOCK IRON WHARF, 20, WHARF ROAD,
CITY ROAD, LONDON,
Beg to inform Gas and Water Companies and the public, that they keep in stock in London all the CASTINGS in general use in Gas and Water Works, including best cold-blast Iron Retorts, Socket and Flange Pipes of all sizes, Bends, Branches, Syphons, Lamp Columns of various patterns, &c.
N.B.—Orders for Cast-iron Tanks, Girders, Columns, Cylinders, and all irregular castings, will have immediate attention.
CHARLES HORSLEY, Agent.
C. H. is prepared to carry out the warming and ventilation of public buildings, &c.; also civil engineering in general.

F. & C. OSLER,
45, OXFORD STREET, LONDON;
Manufactory—Broad Street, Birmingham—Established 1807,
MANUFACTURERS OF GLASS CHANDELIERS, GLASS LUSTRES, TABLE GLASS, &c. &c.
ELEGANT CRYSTAL GLASS CHANDELIERS, for GAS, from £4 upwards (Made from "REGISTERED" DESIGNS), with GLASS BRANCHES, &c.; suitable for DRAWING-ROOMS and BALL-ROOMS. The more extensive use of GAS in private dwellings has induced Messrs. OSLER to direct their particular attention to the manufacture of this class of articles—which, with a view to their general adoption, are offered at very moderate prices. Purchasers can select from a great variety of patterns, to which additions are being constantly made.
THEATRES, CONCERT, ASSEMBLY, AND BALL ROOMS LIGHTED BY ESTIMATE ON THE LOWEST TERMS.

WILLIAM PARKINSON AND CO.,

(SUCCESSORS TO THE LATE SAMUEL CROSLEY,)

COTTAGE LANE, CITY ROAD, LONDON, E.C.,

PATENTEES AND MANUFACTURERS OF

GAS-METERS, GOVERNORS, AND OTHER APPARATUS;

ALSO,

METERS FOR MEASURING WATER, &c., &c.

IMPROVED LOW-SPOUTED GAS-METERS,

Which completely meet the requirements of Lord Redesdale's Sale of Gas Act, and are as simple in their construction, satisfactory in working, and as low in price as the well-known Meters which have been made by W. P. and Co., and their predecessor, Mr. Samuel Crosley, during the last forty years, and of which there are about 300,000 now in use.

STATION-METERS AND GOVERNORS

Of all Sizes, of the best Construction, Materials, and Workmanship, supplied on he shortest notice.

There are about 300 Station-Meters at work of their manufacture, of sizes varying from 750 to 60,000 cubic feet per hour, of which the following are some of the principal ones, recently supplied by them to London Gas Companies, viz. :—

2	for	60,000	cubic feet per hour each	to the Chartered Gaslight and Coke Company, Westminster;
1	„	40,000	„ „	Chartered Gaslight and Coke Company, Brick Lane;
2	„	60,000	„ „	London Gaslight Company, Vauxhall;
1	„	60,000	„ „	Commercial Gas Company, Stepney;
1	„	40,000	„ „	Equitable Gas Company, Pimlico;
1	„	40,000	„ „	Phœnix Gaslight Company, Greenwich,

&c. &c. &c.

And they have also supplied large Station-Meters to the Gas Companies at Birmingham, Nottingham, Sheffield, Southampton, Leeds, Newport, Glasgow, Manchester, Dublin, Cork, and all the principal towns in the United Kingdom, as well as many on the Continent, &c., &c.

Their Station Gas-Governors have been adopted by most of the above-named Companies, and have given universal satisfaction.

PRESSURE REGISTERS, EXPERIMENTAL METERS, PHOTOMETERS,

Minute Clocks, Consumers' Gas-Governors, Pressure-Gauges,

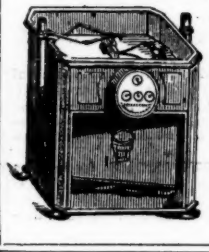
STANDARD EXPERIMENTAL GASHOLDERS FOR PROVING METERS, &c.

GEORGE LOWE'S PATENT NAPHTHA BOXES AND MOTIVE-POWER METERS,

WITH MACHINERY FOR WEIGHTS TO ASSIST THE SUPPLY OF GAS WHERE THE PRESSURE IS LOW.

SPECIFIC GRAVITY APPARATUS, RAIN GAUGES, &c.

BOULTON'S PATENT DRY GAS-METERS,



Of which upwards of 24,000 are at present in use, having gained for themselves an unparalleled patronage from all the principal Gas Companies and Consumers, on account of their unerring registration and the superior workmanship and materials used in their construction, enables the Patentee to sell them now at competitive prices with those of other makers.

Every description of Improved Wet or Patent Dry Meters and Gas Apparatus manufactured by

JOSEPH BOULTON,

28, BAGNIGGE WELLS ROAD, CLERKENWELL.

All Meters warranted to comply with the requirements of Lord Redesdale's "Sale of Gas Act."

CHARLES BOTTEN and SON,
ENGINEERS & METER-MAKERS,
CRAWFORD PASSAGE, RAY STREET,
CLERKENWELL, LONDON (E. C.).

Manufacturers of Station and Patent Protector Consumers' Meters, Patent Slide-Valves, Gas-Fittings, Pipes, &c.

Also, High-pressure Cocks, Hydrants, Closets, and all Water-Fittings.

WEST and GREGSON, Gas-Meter MANUFACTURERS, &c.
UNION STREET, OLDHAM.

Station and Experimental Meters, Gas Pressure Registers, Gauges, Experimental Gasholders, Governors, Slide Valves, &c. &c.

W. and G. would respectfully call the attention of Gas Engineers and Managers to their Station-meters, having made and erected the largest in use at the present time, two of which may be seen at the Stockport and Liverpool Gas Works, on application to the respective Engineers.

M. SHEEN, Gas and Railway Lantern Maker, 90½, Holborn Hill, begs to inform Managers of Gas-Works, &c., that she continues to contract and supply Lanterns on reasonable terms, and keep them in repair by the year.

EIGHTON MOOR GAS COALS.—Parties wishing to be supplied with these first-class Gas Coals will please to apply to Mr. MATTHEW NESBIT, EIGHTON MOOR OFFICE, NEWCASTLE-UPON-TYNE. These coals are well known as among the richest in gas, and working the roundest on the River Tyne. They are extensively used by metropolitan gas works.

WROUGHT-IRON Guides for Gas-HOLDERS, when Trussed upon scientific principles, are more capable of resisting strains, in every direction, than Cast Columns of any form can be; and weigh only one-fifth as much as the latter. Designs and Working Drawings for Guides and Ties can be obtained of the Inventor, CHARLES DIXON, C.E., Chichester, SUSSEX.

ALFRED PENNY, Engineer,
WENLOCK IRON WORKS,
WHARF ROAD, CITY ROAD, LONDON.

Mr. PENNY begs to inform Gas and Water Companies that he undertakes the erection of new, or the alteration of existing, works; and that he may be consulted generally on all matters connected with gas and water supply. He is also prepared to supply best Cold-blast Retorts, Socket-Pipes, and Connections, Iron Borings, &c. &c., and all the necessary Castings used in Gas and Water-Works.

*** Country orders executed with care and despatch.

JOHN ROGERSON and CO.,
NEWCASTLE-ON-TYNE & MIDDLESBRO'-ON-TEES.

Wrought and Cast Iron Pipes, Cast-Iron Retorts, and all kinds of Foundry Work necessary for Gas-Works. Fire-Bricks and Clay Retorts. Gas Coals of every description. Pig, Bar, and Plate Iron.

LONDON HOUSE:
12, ROYAL EXCHANGE BUILDINGS.

JAMES MEACOCK,

PATENT DRY AND WET GAS-METER MANUFACTURER,

7, SNOW HILL, AND 16, WEST STREET, LONDON.

ESTABLISHED 1836.

JAMES MEACOCK begs to thank Gas Companies and the Trade generally for the very liberal support awarded him in his Patent Dry Gas-Meter; his Improvement in connecting the Diaphragm between Metal Rings, cemented and screwed to the Tin Frames, being pronounced by Gas Engineers to be the most perfect improvement to the Dry Meter since its introduction.

J. M. invites attention to his Improvements in EXPERIMENTAL WET GAS-METERS, by which he renders impossible any Leakage from the Stuffing-Box.

These METERS are GUARANTEED to meet all the REQUIREMENTS of the SALE OF GAS ACT.

GOVERNORS, STATION-METERS. PHOTOMETERS,
EXPERIMENTAL TESTING GASHOLDERS, HIGH-PRESSURE GAUGES,
AND ALL APPARATUS IN USE AT THE GAS MANUFACTORY.

ALEXANDER WRIGHT,

GAS ENGINEER, MANUFACTURER OF GAS-METERS, GOVERNORS, AND EVERY DESCRIPTION OF GAS APPARATUS,
55, MILLBANK STREET, WESTMINSTER.

CONSUMERS' METERS at the List Price, with a Liberal Discount to Wholesale Purchasers.

THOMPSON'S BROMINE TEST, £1. 1s.—BROMINE, 3s. per Ounce.

BISULPHURET OF CARBON TEST, £2. 2s.

APPARATUS FOR DETERMINING THE HEATING POWER OF SAMPLES OF COAL AND OTHER DESCRIPTIONS OF FUEL, £5. 5s., INVENTED BY LEWIS THOMPSON, Esq., M.R.C.S.

REGISTERING PRESSURE GAUGE, Net Price, £8. Glass Shade, 10s. extra.

STATION METERS, PRESSURE GAUGES, PHOTOMETERS, SPECIFIC GRAVITY APPARATUS, &c.

LORD REDESDALE'S "SALE OF GAS BILL" having received the sanction of the Legislature, Gas Companies and Consumers are respectfully informed that ALL Meters made at this Establishment are constructed most carefully to meet the requirements of this Act.

WRIGHT'S COMPENSATING METER possesses peculiar claims on the attention of those who desire to obtain a most simple and thoroughly efficient instrument at a moderate price.

CANNEL and COAL of the best descriptions for making GAS and COKE.
(As per Analyses.)
GAS CANNEL, 17s., 15s. 6d., and 14s. per ton.
GAS COAL, 11s. 6d., 9s. 6d., and 8s. 6d. per ton.
STEAM COAL, 10s., 9s. 6d., and 9s. per ton.
All free on board Vessels in Liverpool.
Handpicked Cannel and Coal about 10 per cent. additional. Concession in prices made for large quantities.
GAS APPARATUS of all descriptions, and on the most approved principles; also Purifying and other materials supplied.
ANALYSES, PLANS, and ESTIMATES, and other information required, and the highest references furnished on application.
CONTRACTS for Materials and Works entered into.
No charge made for Superintending Shipments, Preparing Bills of Lading, or passing Entries.

EMANUEL TURNER and CO.,
EXPORT OFFICES:
34, CASTLE STREET, LIVERPOOL.

PADDON AND FORD,

GAS-METER AND APPARATUS WORKS,
GRAY'S INN ROAD, LONDON.

MANUFACTURERS OF WET AND DRY GAS-METERS, STATION-METERS, GOVERNORS, EXPERIMENTAL APPARATUS, &c. &c.

Sole Manufacturers of Sanders's Patent Compensator for maintaining a correct Water-Level in the Meter without impeding its legitimate action.

All Meters manufactured by P. and F. are guaranteed to be in strict conformity with Lord Redesdale's Sale of Gas Act.

A large number of **STATION-METERS,** up to 80,000 feet per hour (being by far the largest in use), and **GOVERNORS** for **MAINS,** up to 24 inches, have been constructed by Paddon and Ford. These Meters and Governors possess peculiar advantages as regards strength and freedom of action. The Meters are warranted to offer less resistance than Meters generally.

Manufacturers also of **PADDON'S PATENT STREET-LAMP REGULATORS,** for insuring any required consumption. These Regulators are in general and increasing use, and references can be given to Gas Companies who use them for every Lamp.

Contractors for the erection or alteration of Gas-Works, and every description of apparatus required in Gas-Works supplied.

FIRE-CLAY GAS RETORTS.

ESTABLISHED IN 1795.

JOSEPH CLIFF,

WORTLEY FIRE-BRICK WORKS, near LEEDS.

THESE RETORTS are unrivalled in excellence, being the BEST FINISHED INTERNALLY, and THE MOST CORRECT IN FORM, of any in the Kingdom. From the peculiar composition used in working up the face of the material, they are rendered unusually smooth, close, and FREE FROM SURFACE CRACKS, thus, in a great measure, preventing leakage and the adhesion of carbon to their interior surface.

To meet the yearly increasing demand of UPWARDS OF THIRTY SEASONS and to carry out the late improvements in the manufacture, the Premises have been re-erected and much enlarged, and Engineers may rely WITH CONFIDENCE on their orders being completed with a greater regard to despatch than by any other House.

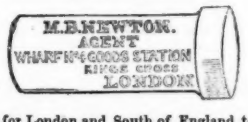
THE WORKS ARE WELL SITUATED

For EXPORT from the Ports of { LONDON, LIVERPOOL, HULL, MIDDLESBRO', HARTLEPOOL, and STOCKTON.

FIRE-BRICKS, LUMPS, GUARDS, TILES, AND CLAY OF THE SAME QUALITY.

M. B. NEWTON, London Agent, No. 4, Wharf, King's Cross Goods Station.

J. CLIFF'S Fire Bricks, Clay RETORTS, &c.



Orders for London and South of England to be addressed to Mr. NEWTON, Agent for the District, 16, Castle Terrace, New Hampstead Road, KENTISH TOWN, N.W.

N.B.—A few Retorts of each size, and a large stock of Bricks and Lumps, always on hand at the above Wharf.

KINSON FIRE BRICKS are indestructible by heat, and are warranted to last twice as long as Stourbridge, Newcastle, or Welsh bricks. 80s. per 1000 at Nine Elms Station.

WORKS: POOLE, DORSET.

WILLIAM RYDER, General MINERAL AND METAL AGENT AND MERCHANT, 4, DEAN STREET, NEWCASTLE-ON-TYNE,

is prepared to supply Gas and Water Companies with Apparatus and Appliances of every description, including Cast and Wrought Iron Goods, Coals, Fire-Bricks, Retorts, &c. &c.

Any communications addressed to him as above shall have prompt attention.

GEORGE CUTLER, Gasholder MAKER,

No. 8, WENLOCK-ROAD, CITY-ROAD, LONDON.

Contracts for Tanks, Gasholders, Roofs, Purifiers, and all descriptions of Gas Apparatus executed on the most reasonable terms. Improved Slide Valves, Steam, and Range Boilers, and Smiths' Work, of the best materials and workmanship.

BENJAMIN GIBBONS, Jun., DEEPDALE FIRE-CLAY & BRICK WORKS, Near DUDLEY,

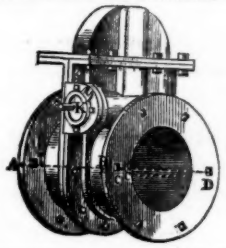
Manufacturer of every description of Fire-Bricks, Lumps, Quarries, Shields, Flue Covers, &c., to any size or shape required.

FIRE-CLAY RETORTS,

TO MODEL OR DRAWING.

B. G. begs to call the attention of Gas Companies to his Fire-Clay Retorts, which have been used with great satisfaction in some of the largest Gas-Works in the Metropolis and many Provincial Towns in England.

References given, if required.



BRYAN DONKIN & CO.

keep always on stock their

IMPROVED GAS VALVES

from 2 inches to 18 inches, price 11s. 6d. to 13s. 6d. per inch diameter

List of prices, with full dimensions of all sizes up to 27 inches, to be had on application.

These Valves are all proved to 30 lbs. on the square inch before leaving the works.

BRYAN DONKIN & CO.,

ENGINEERS,

NEAR GRANGE ROAD, BERMONDSEY.

BIRTLEY IRON WORKS, CHESTER-LE-STREET, DURHAM.

Manufactory for every description of Casting and Machinery for Gas Works and Water Works.

Warehouse in London for Cast-iron Pipes and Connections of all sizes and in any quantity, Scott's Wharf, Bankside, Southwark.

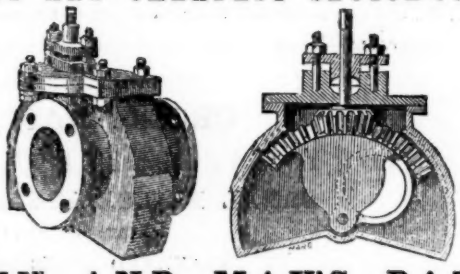
Office in London, Mr. E. M. PERKINS, 78, Lombard Street.

HARRIS and PEARSON PROPRIETORS OF BEST CLASS-HOUSE POT AND CRUCIBLE CLAY. MANUFACTURERS OF **FIRE BRICKS GAS RETORTS &C.**

AMBLECOTE FIRE CLAY AND BRICK WORKS, STOURBRIDGE.

Late in the occupation of I. and W. King. Originally J. Pidcock, Esq.

BEST AND CHEAPEST SLUICE-COCK.



BROWN AND MAY'S PATENT.

Above 3-inch diameter, price 10s. per inch. Brass face, 6d. per inch extra.

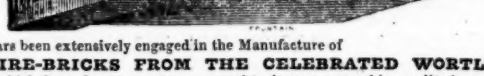
Can be taken to pieces without being removed from the line of Piping.

NORTH WILTS FOUNDRY, DEVIZES.

Wholesale Agents, Messrs. S. and E. RANSOME, 31, Essex Street, Strand, E.C., Where a Sample may be seen.

WILLIAM INGHAM AND SONS,

WORTLEY FIRE-BRICK AND RETORT WORKS,

Near 

Leeds.

W. INGHAM and SONS, having for many years been extensively engaged in the Manufacture of

RETORTS AND FIRE-BRICKS FROM THE CELEBRATED WORTLEY FIRE-CLAY,

beg to call especial attention to their RETORTS, which have for many seasons proved to be unsurpassed in quality by any in the Kingdom, their FREEDOM FROM CRACKS and the ADHESION OF CARBON rendering them worthy the attention of all parties interested in the making of Gas.

The Works are of such magnitude as to ensure the prompt execution of orders to any extent.

Estimates for Setting, or Bricklayers sent when required.

GAS OVENS IN SEGMENTS OF EQUAL QUALITY.

London Agents: CHADWICK and AKEROYD, Willington Stone Wharf, Regent's Park Basin.

A large stock of Fire-Bricks, Fire-Clay, Terra Cotta, and Drain-Pipes of all sizes kept in London at CHRISTIE & CO.—Wharf, 64, Bankside, Southwark, where all particulars of Prices, &c., may be obtained.

N.B.—*Export orders continue to have prompt attention.*

WILLIAM SUGG,

GAS ENGINEER, AND MANUFACTURER OF GENERAL GAS APPARATUS.

DRY GAS-METERS, COMPENSATING and WATER-BOX WATER-METERS, to suit the new Gas Act.

STATION-METERS, GOVERNORS, AND PHOTOMETERS.

STREET-LAMP GOVERNORS, fitted with CASED LAVA BURNERS,

Complete, ready for use, regulated to burn any required quantity, which will not be exceeded under any pressure. The well-known property of Lava Burners to remain uninjured by the action of heat, corrosion, water, &c., show them to be the most suitable and serviceable for Public and Private Lighting.

GAS-METER and APPARATUS WORKS: 19 and 20, MARSHAM STREET, WESTMINSTER.

SALE OF GAS ACT.

MESSRS. CROLL, RAIT, AND CO.,

Manufacturers of Croll's Patent Improved

DRY GAS-METER,

being informed that several Gas Companies are under the impression that Dry Meters will not be allowed by the above Act, beg to say that such is not the case, inasmuch as the Act embraces "every kind of machine used for measuring gas," and provides for the testing of the same, in its 13th clause.

Speaking for themselves, and of the Meters manufactured by them, C., R., and Co. have the gratification of knowing that not one single Meter out of the large number they have sold, will, when tested by an Inspector, be rejected; and, consequently, that neither Gas Companies nor Consumers who have these Meters in use will be put to one farthing expense for alterations.

C., R., and Co. always adopted the unit of measure provided for by the 2nd clause of the Act, and have never allowed themselves a greater latitude than 1 per cent. either fast or slow, and they intend to adhere to these limits, notwithstanding that the Act allows 2 per cent. fast and 3 per cent. slow.

C., R., and Co.'s Meters register most correctly all the gas passed through them, whether it be the smallest quantity or the full complement for which the Meters are made; and *they are prepared to give written guarantees to Purchasers that the Meters shall, when tested by an Inspector on his appointment under the Act, be approved of by him as correct. In the event of such not being the case, the Purchaser to be entitled to return the Meters to C., R., and Co., and claim from them their cost, together with any expenses incurred by their rejection.*

Further, C., R., and Co. undertake, during a period of five years from the date of purchase, to put into good order, free of charge to the Purchaser, any Meters of their manufacture which may become defective.

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